

**Number of research papers published per teacher in the Journals as notified on UGC CARE list for the year 2018**

Sl. No	Title of paper	Name of the author/s	Department of the teacher	Name of journal	Year of publication	Page number
1	DESIGN OF DFIG CONVERTERS TO OVERCOME GRID FAULTS USING IMPROVED STATOR FLUX BASED FIELD ORIENTED CONTROL AND STATCOM CONTROLLER	ANANTH D.V.N., KUMAR G.V.N.	ELECTRICAL AND ELECTRONICS ENGINEERING	TECHNOLOGY AND ECONOMICS OF SMART GRIDS AND SUSTAINABLE ENERGY	2018	<a href="#">14</a>
2	CHARACTERIZATION AND ELECTRICAL CONDUCTIVITY OF LONIC OXIDE NANO FILMS BY DC AND AC METHODS	PADHI S.N., RAM K.S.R., KAMAL A.S.N., KRISHNA C.S.R., RAO B.N.D.	MECHANICAL ENGINEERING	ARPN JOURNAL OF ENGINEERING AND APPLIED SCIENCES	2018	<a href="#">15</a>
3	UKF BASED ESTIMATION APPROACH FOR DVR CONTROL TO COMPENSATE VOLTAGE SWELL IN DISTRIBUTION SYSTEMS	SASIKIRAN P., MANOHAR T.G.	ELECTRICAL AND ELECTRONICS ENGINEERING	AIN SHAMS ENGINEERING JOURNAL	2018	<a href="#">16</a>
4	EQUAL-CHANNEL ANGULAR EXTRUSION OF AL 5083 ALLOY WITH COPPER SHIELDING	VARADALA A.B., GURUGUBELLI S.N., BANDARU S.	MECHANICAL ENGINEERING	EMERGING MATERIALS RESEARCH	2018	<a href="#">17</a>
5	MODELING OF ENHANCEMENT EFFECT OF MOTH-EYE ANTIREFLECTIVE COATING ON ORGANIC LIGHT-EMITTING DIODE	MUNIRAJU C.B., MUNISWAMY V., YELLARESWARA RAO K., KRISHNASWAMY N.	ELECTRONICS AND COMMUNICATION ENGINEERING	JOURNAL OF NANOPHOTONICS	2018	<a href="#">18</a>
6	MITIGATION OF FIELD STRESS WITH METAL INSERTS FOR CONE TYPE SPACER IN A GAS INSULATED BUSDUCT UNDER DELAMINATION	ADARI J., GADI V.S.K.R., GUNDAVARAPU V.N.K.	ELECTRICAL AND ELECTRONICS ENGINEERING	ENGINEERING SCIENCE AND TECHNOLOGY, AN INTERNATIONAL JOURNAL	2018	<a href="#">19</a>
7	EEC-FM: ENERGY EFFICIENT CLUSTERING BASED ON FIREFLY AND MIDPOINT ALGORITHMS IN WIRELESS SENSOR NETWORK	DANIEL R., RAO K.N.	INFORMATION TECHNOLOGY	KSII TRANSACTIONS ON INTERNET AND INFORMATION SYSTEMS	2018	<a href="#">20</a>



8	EQUAL CHANNEL ANGULAR EXTRUSION OF SEMICIRCULAR AA 5083 COVERED WITH COPPER CASING	VARADALA A.B., GURUGUBELLI S.N., BANDARU S.	MECHANICAL ENGINEERING	EMERGING MATERIALS RESEARCH	2018	<a href="#">21</a>
9	A NOVEL TECHNIQUE FOR CONTROLLING SPEED AND POSITION OF BEARINGLESS SWITCHED RELUCTANCE MOTOR EMPLOYING SENSORLESS SLIDING MODE OBSERVER	NAGESWARA RAO P., SIVA KRISHNA RAO G.V., NAGESH KUMAR G.V.	ELECTRICAL AND ELECTRONICS ENGINEERING	ARABIAN JOURNAL FOR SCIENCE AND ENGINEERING	2018	<a href="#">22</a>
10	A HYBRID APPROACH FOR IDENTIFICATION OF MANHOLE AND STAIRCASE TO ASSIST VISUALLY CHALLENGED	PONNADA S., SRINIVAS Y., MADHUSUDHANA RAO T.V.	COMPUTER SCIENCE ENGINEERING	IEEE ACCESS	2018	<a href="#">23</a>
11	ANALYSIS OF STRESSES OF GRAPHITE /EPOXY COMPOSITE PLATE USING HYPERMESH	SIVA RAMA KRISHNA C.H., KUMAR M., KIRAN M., DIVYA B.	MECHANICAL ENGINEERING	INTERNATIONAL JOURNAL OF MECHANICAL AND PRODUCTION ENGINEERING RESEARCH AND DEVELOPMENT	2018	<a href="#">24</a>
12	RESIDUAL STRESSES ANALYSIS OF LAMINATED GRAPHITE/EPOXY COMPOSITE PLATES USING HYPERMESH	SIVA RAMAKRISHNA C.H., GANESH M.R., RAO R.V., DHARMATEJA P.	MECHANICAL ENGINEERING	INTERNATIONAL JOURNAL OF MECHANICAL AND PRODUCTION ENGINEERING RESEARCH AND DEVELOPMENT	2018	<a href="#">25</a>
13	CATION DISTRIBUTION OF NI-ZN-MN FERRITE NANOPARTICLES	PARVATHEESWARA RAO B., DHANALAKSHMI B., RAMESH S., SUBBA RAO P.S.V.	BASIC SCIENCE & HUMANITIES	JOURNAL OF MAGNETISM AND MAGNETIC MATERIALS	2018	<a href="#">26</a>
14	MODIFIED WENNER METHOD FOR DEMARCATION OF SALINE BELT 3-D PROJECTION	RAO G.V.V.R., MUKUND D., PRATAP DAS R.	CIVIL ENGINEERING	INTERNATIONAL JOURNAL OF CIVIL ENGINEERING AND TECHNOLOGY	2018	<a href="#">27</a>
15	OPTIMAL UTILIZATION OF GENERATORS USING HARMONY SEARCH ALGORITHM FOR THE MANAGEMENT OF CONTINGENCY	BALI S.K., MUNAGALA S., GUNDAVARAPU V.N.K.	ELECTRICAL AND ELECTRONICS ENGINEERING	INTERNATIONAL JOURNAL OF INNOVATIVE COMPUTING,	2018	<a href="#">28</a>





				INFORMATION AND CONTROL		
16	MULTIFERROIC AND MAGNETOELECTRIC STUDIES ON BMFO- $\epsilon$ -NZFO NANOCOMPOSITES	DHANALAKSHMI B., KOLLU P., BARNES C.H.W., PARVATHEESWARA RAO B., RAO P.S.V.S.	BASIC SCIENCE & HUMANITIES	APPLIED PHYSICS A: MATERIALS SCIENCE AND PROCESSING	2018	<a href="#">29</a>
17	ROTOR LEVITATION AND VIBRATION CONTROL OF HYBRID POLE BSRM USING FUZZY SLIDING MODE CONTROLLER	SOBHAN P.V.S., NAGESH KUMAR G.V., RAMANA RAO P.V.	ELECTRICAL AND ELECTRONICS ENGINEERING	INTERNATIONAL JOURNAL OF INNOVATIVE COMPUTING, INFORMATION AND CONTROL	2018	<a href="#">30</a>
18	THYRISTOR CONTROLLED SERIES COMPENSATOR BASED OPTIMAL REALLOCATION OF GENERATORS FOR CONTINGENCY MANAGEMENT	SRAVANA KUMAR B., SURYAKALAVATHI M., NAGESH KUMAR G.V.	ELECTRICAL AND ELECTRONICS ENGINEERING	ECTI TRANSACTIONS ON ELECTRICAL ENGINEERING, ELECTRONICS, AND COMMUNICATIONS	2018	<a href="#">31</a>
19	GEOMETRICAL BEHAVIOR OF LAMINATED GRAPHITE/EPOXY COMPOSITE USING HYPERMESH	RAMAKRISHNA C.S., SUBBARAO K.V., ARJI S.	CIVIL ENGINEERING	INTERNATIONAL JOURNAL OF ENGINEERING AND TECHNOLOGY(UAE)	2018	<a href="#">32</a>
20	LINEAR PROGRAMMING TECHNIQUE BASED OPTIMAL RELAY COORDINATION IN A RADIAL DISTRIBUTION SYSTEM	NAGESH KUMAR V., SRAVANA KUMAR B., VENKATESWARA RAO B., SOBHAN P.V.S., APPALA NAIDU K.	INFORMATION TECHNOLOGY	INTERNATIONAL JOURNAL OF ENGINEERING AND TECHNOLOGY(UAE)	2018	<a href="#">33</a>
21	ROTOR SUSPENSION AND STABILIZATION OF BEARINGLESS SRM USING SLIDING MODE CONTROLLER	SOBHAN P.V.S., NAGESH KUMAR G.V., RAMANA RAO P.V.	ELECTRICAL AND ELECTRONICS ENGINEERING	INTERNATIONAL JOURNAL OF ENGINEERING AND TECHNOLOGY(UAE)	2018	<a href="#">34</a>
22	A SURVEY ON EXISTING IP TRACE BACK MECHANISMS AND THEIR COMPARISONS	SHARIFF V., RUTH RAMYA K., DEVI B.B., BHATTACHARYYA D., KIM T.-H.	COMPUTER SCIENCE ENGINEERING	INTERNATIONAL JOURNAL OF ENGINEERING AND TECHNOLOGY(UAE)	2018	<a href="#">35</a>



23	ROTOR AUTOCENTERING AND SPEED CONTROL OF HYBRID BEARINGLESS SRM USING SINGLE-NEURON ADAPTIVE PID CONTROLLER	SOBHAN P.V.S., NAGESH KUMAR G.V., RAMANA RAO P.V.	ELECTRICAL AND ELECTRONICS ENGINEERING	INTERNATIONAL JOURNAL OF ENGINEERING AND TECHNOLOGY(UAE)	2018	<a href="#">36</a>
24	A NOVEL FEATURE SELECTION BASED CLASSIFICATION MODEL FOR DISEASE SEVERITY PREDICTION ON ALZHEIMER'S DATABASE	KRISHNA I.M., NARSIMHAM C., CHAKRAVARTHY A.S.N.	COMPUTER SCIENCE ENGINEERING	JOURNAL OF ADVANCED RESEARCH IN DYNAMICAL AND CONTROL SYSTEMS	2018	<a href="#">37</a>
25	TEXT MINING WITH HADOOP: DOCUMENT CLUSTERING WITH TF_IDF AND MEASURING DISTANCE USING EUCLIDEAN	LAXMI LYDIA E., VIJAYA KUMAR K., AMARANATHA REDDY P., RAMYA D.	COMPUTER SCIENCE ENGINEERING	JOURNAL OF ADVANCED RESEARCH IN DYNAMICAL AND CONTROL SYSTEMS	2018	<a href="#">38</a>
26	VIBRATION ANALYSIS AND CONTROL OF LOCOMOTIVE SYSTEM	SHIREESHA Y., VENKATA SURESH B., SATEESH B.	MECHANICAL ENGINEERING	MECHANICS AND MECHANICAL ENGINEERING	2018	<a href="#">39</a>
27	DOCUMENT CLUSTERING BASED ON TEXT MINING K-MEANS ALGORITHM USING EUCLIDEAN DISTANCE SIMILARITY	LAXMI LYDIA E., GOVINDASWAMY P., LAKSHMANAPRABU S.K., RAMYA D.	COMPUTER SCIENCE ENGINEERING	JOURNAL OF ADVANCED RESEARCH IN DYNAMICAL AND CONTROL SYSTEMS	2018	<a href="#">40</a>
28	FUZZY LOGIC BASED TECHNIQUE FOR PROPELLER NOISE IN MECHANICAL STRUCTURES	SAMPATH DAKSHINA MURTHY A., KUMAR P.V.J.R., DAS R.P., KOTESWARA RAO S.	ELECTRONICS AND COMMUNICATION ENGINEERING	INTERNATIONAL JOURNAL OF ENGINEERING AND TECHNOLOGY(UAE)	2018	<a href="#">41</a>
29	ANALYZING THE PERFORMANCE OF DSR PROTOCOL ON MANET'S NETWORK MODELS WITH VARIOUS SCENARIOS USING VISIM	THIRUPATHI RAO N., MADHUSUDHAN RAO V., BHATTACHARYYA D., KIM T.-H.	COMPUTER SCIENCE ENGINEERING	INTERNATIONAL JOURNAL OF ENGINEERING AND TECHNOLOGY(UAE)	2018	<a href="#">42</a>
30	CONSTRAINED CONSENSUS IN HYBRID STATE ESTIMATION IN WIDE AREA MONITORING	DEEPIKA K.K., SHOME P., VIJAYA KUMAR J., KESAVA RAO G.	ELECTRICAL AND ELECTRONICS ENGINEERING	JOURNAL OF ADVANCED RESEARCH IN DYNAMICAL AND CONTROL SYSTEMS	2018	<a href="#">43</a>
31	PARAMETERS OPTIMISATION OF VEHICLE SUSPENSION SYSTEM FOR BETTER RIDE COMFORT	SATYANARAYANA V.S.V., SATEESH B., RAO N.M.	MECHANICAL ENGINEERING	INTERNATIONAL JOURNAL OF VEHICLE PERFORMANCE	2018	<a href="#">44</a>



32	FOUR QUADRANT CONTROL OF ROTOR DISPLACEMENTS OF BEARINGLESS SWITCHED RELUCTANCE MOTOR UNDER ECCENTRIC FAULT CONDITIONS	PULIVARTHI N.R., RAO G.V.S.K., KUMAR G.V.N.	ELECTRICAL AND ELECTRONICS ENGINEERING	JOURNAL OF APPLIED SCIENCE AND ENGINEERING	2018	<a href="#">45</a>
33	GRAPHICAL MODELLING FRAMEWORK(GMF) OF MAP-REDUCE PROGRAMMING	LAXMI LYDIA E., AMARANATHA REDDY P.	COMPUTER SCIENCE ENGINEERING	JOURNAL OF ADVANCED RESEARCH IN DYNAMICAL AND CONTROL SYSTEMS	2018	<a href="#">46</a>
34	PERFORMANCE INSPECTION OF APACHE SPARK AND MAP REDUCE ANALYZING THROUGH K-MEANS	LAXMI LYDIA E., GOVINDASAMY P., DEVIKA G., KAVEENA REBECCA A.	COMPUTER SCIENCE ENGINEERING	JOURNAL OF ADVANCED RESEARCH IN DYNAMICAL AND CONTROL SYSTEMS	2018	<a href="#">47</a>
35	SENSOR LESS CONTROL OF POSITION AND DISPLACEMENTS OF BEARING LESS SWITCHED RELUCTANCE MOTOR BY USING SLIDING MODE OBSERVER	PULIVARTHI N.R., SIVA KRISHNA RAO G.V., NAGESH KUMAR G.V.	ELECTRICAL AND ELECTRONICS ENGINEERING	JOURNAL OF ENGINEERING AND APPLIED SCIENCES	2018	<a href="#">48</a>
36	KANTOWSKI-SACHS MODIFIED HOLOGRAPHIC RICCI DARK ENERGY MODEL IN SAEZ-BALLESTER THEORY OF GRAVITATION	BHASKAR RAO M.P.V.V., REDDY D.R.K., SOBHAN BABU K.	BASIC SCIENCE & HUMANITIES	CANADIAN JOURNAL OF PHYSICS	2018	<a href="#">49</a>
37	SIMULATED STUDIES ON THE PERFORMANCE OF INTELLIGENT TRANSPORTATION SYSTEM USING VEHICULAR NETWORKS	EALI S.N.J., RAO N.T., SWATHI K., SATYANARAYANA K.V., BHATTACHARYYA D., KIM T.-H.	COMPUTER SCIENCE ENGINEERING	INTERNATIONAL JOURNAL OF GRID AND DISTRIBUTED COMPUTING	2018	<a href="#">50</a>
38	DESIGN, ANALYSIS AND PARAMETRIC STUDY OF RECTANGULAR DIELECTRIC RESONATOR ANTENNA ARRAYS	K. SRINIVASA NAIK, DONGA MADHUSUDAN AND S. ARUNA	ELECTRONICS AND COMMUNICATION ENGINEERING	INTERNATIONAL JOURNAL OF ADVANCED SCIENCE AND TECHNOLOGY	2018	<a href="#">51</a>
39	A VERSATILE AND COST EFFECTIVE MULTIMODAL WHEELCHAIR	MURTHY A.S.D., DAS R.P., RAO S.K.	ELECTRONICS AND COMMUNICATION ENGINEERING	INTERNATIONAL JOURNAL OF ENGINEERING AND TECHNOLOGY(UAE)	2018	<a href="#">52</a>



40	HETEROGENEITY OF HUMAN BRAIN TUMOR WITH LESION IDENTIFICATION, LOCALIZATION, AND ANALYSIS FROM MRI	ROY S., BHATTACHARYYA D., BANDYOPADHYAY S.K., KIM T.-H.	COMPUTER SCIENCE ENGINEERING	INFORMATICS IN MEDICINE UNLOCKED	2018	<a href="#">53</a>
41	PERFORMANCE OF M/M/1 AND M/D/1 QUEUING MODELS ON DATA CENTERS WITH CLOUD COMPUTING TECHNOLOGY USING MATLAB	RAO N.T., SRINIVAS P., SUDHA K., BHATTACHARYYA D., KIM T.-H.	COMPUTER SCIENCE ENGINEERING	INTERNATIONAL JOURNAL OF GRID AND DISTRIBUTED COMPUTING	2018	<a href="#">54</a>
42	SHAPE RECOGNITION BASED ON MAPREDUCE AND IN-MEMORY PROCESSING ON DISTRIBUTED FILE SYSTEM	BAIK N., HAZRA D., BHATTACHARYYA D.	COMPUTER SCIENCE ENGINEERING	INTERNATIONAL JOURNAL OF GRID AND DISTRIBUTED COMPUTING	2018	<a href="#">55</a>
43	ADAPTIVE FUZZY PI CURRENT CONTROL OF GRID INTERACT PV INVERTE	SANKAR R.R.S., KUMAR J.S.V., RAO M.G.	ELECTRICAL AND ELECTRONICS ENGINEERING	INTERNATIONAL JOURNAL OF ELECTRICAL AND COMPUTER ENGINEERING	2018	<a href="#">56</a>
44	EFFECT OF ALKALI ACTIVATORS ON DIFFERENT CURINGS OF COMPRESSIVE STRENGTHS OF GEOPOLYMER CONCRETE	K. JAGADEESWARI, BIKASH KUMAR SINGH, PANDIRI HARISH	CIVIL ENGINEERING	INTERNATIONAL JOURNAL OF RESEARCH AND SCIENTIFIC INNOVATION (IJRSI)	2018	<a href="#">57</a>
45	STUDY ON DEVIATIONS AND SETTLEMENTS OF RAILS AND ITS MAINTENANCE IN BROAD GAUGE RAILWAY TRACK	DR.G.VENKATA RAO, K.S.B.PRASAD	CIVIL ENGINEERING	INTERNATIONAL JOURNAL OF COMPUTATIONAL ENGINEERING RESEARCH	2018	<a href="#">58</a>
46	STUDY OF DISCHARGE VARIATIONS WITH INCREASED IMPERMEABLE COVER – A CASE STUDY OF VIGNAN'S INSTITUTE OF INFORMATION TECHNOLOGY, VISAKHAPATNAM	G.VENKATA RAO, M.LEELA PRIYANKA, K.RAGHAVENDRA, MD.SIRAJUDDIN	CIVIL ENGINEERING	INTERNATIONAL JOURNAL OF RESEARCH AND SCIENTIFIC INNOVATION	2018	<a href="#">59</a>
47	STUDY ON WATERSHED ANALYSIS FOR SUSTAINABLE SOIL CONSERVATION AND WATERSHED DEVELOPMENT IN GVMC AREA, VISAKHAPATNAM.	M. LEELA PRIYANKA, G. VENKATA RAO, M. V. N. S. SIVA CH. RAJA SEK HAR	CIVIL ENGINEERING	INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS	2018	<a href="#">60</a>



48	EXPERIMENTAL STUDY ON M30 GRADE CONCRETE WITH PARTIAL REPLACEMENT OF CEMENT WITH EGG SHELL POWDER	DR.CH. KANNAM NAIDU DR. CH. VASUDEVA RAO DR. G. VENKATA RAO	CIVIL ENGINEERING	INTERNATIONAL JOURNAL OF CIVIL ENGINEERING AND TECHNOLOGY	2018	<a href="#">61</a>
49	EMPLOYEE RANKING SYSTEM USING UMDA ALGORITHM	VISWANATHASARMA CH	COMPUTER SCIENCE ENGINEERING	INTERNATIONAL JOURNAL OF ADVANCED SCIENCE AND TECHNOLOGY	2018	<a href="#">62</a>
50	IMAGE REGISTRATION TECHNIQUES FOR (CTMRI)	CH SWAPNAPRIYA	COMPUTER SCIENCE ENGINEERING	INTERNATIONAL JOURNAL OF ENGINEERING APPLIED SCIENCES AND TECHNOLOGY	2018	<a href="#">63</a>
51	APPLICATIONS, CHALLENGES AND PROTOCOLS OF MANETS: A REVIEW	S NAGAMALLIK RAJ	COMPUTER SCIENCE ENGINEERING	ASIA-PACIFIC JOURNAL OF CONVERGENT RESEARCH INTERCHANGE	2018	<a href="#">64</a>
52	A REVIEW ON INDUSTRIAL APPLICATIONS OF MACHINE LEARNING	N THIRUPATHI RAO	COMPUTER SCIENCE ENGINEERING	INTERNATIONAL JOURNAL OF DISASTER RECOVERY AND BUSINESS CONTINUITY	2018	<a href="#">65</a>
53	SECURITY ISSUES AND ATTACKS IN WIRELESS SENSOR NETWORKS: SOME CASE STUDIES	N THIRUPATHI RAO	COMPUTER SCIENCE ENGINEERING	INTERNATIONAL JOURNAL OF SECURITY AND ITS APPLICATIONS	2018	<a href="#">66</a>
54	SECURITY AND ASSURANCE ASPECTS TO BE OBSERVED IN CLOUD COMPUTING BASED DATA CENTERS: A STUDY	N THIRUPATHI RAO	COMPUTER SCIENCE ENGINEERING	INTERNATIONAL JOURNAL OF SECURITY AND ITS APPLICATIONS	2018	<a href="#">67</a>
55	STUDIES ON THE TMS USING IR SENSORS FOR AVOIDING CONGESTION IN TRAFFIC ON INDIAN CITY ROADS	N THIRUPATHI RAO	COMPUTER SCIENCE ENGINEERING	INTERNATIONAL JOURNAL OF TRANSPORTATION	2018	<a href="#">68</a>





56	SOME STUDIES ON THE SECURITY AND SPACE ISSUES AND CHALLENGES IN CLOUD COMPUTING BASED DATA CENTERS	CH SEKHAR	COMPUTER SCIENCE ENGINEERING	INTERNATIONAL JOURNAL OF SECURITY AND ITS APPLICATIONS	2018	<a href="#">69</a>
57	EFFECTIVELY UTILIZATION OF ROAD DIVIDER FOR ORGANIZED VEHICULAR TRAFFIC USING IOT	CH SEKHAR	COMPUTER SCIENCE ENGINEERING	INTERNATIONAL JOURNAL OF SCIENCE AND ENGINEERING FOR SMART VEHICLES	2018	<a href="#">70</a>
58	A STUDY ON FRAME WORK OF H2O FOR DATA SCIENCE	CH SEKHAR	COMPUTER SCIENCE ENGINEERING	INTERNATIONAL JOURNAL OF ADVANCED RESEARCH IN BIG DATA MANAGEMENT SYSTEM	2018	<a href="#">71</a>
59	EFFECTIVE USE OF BIG DATA ANALYTICS IN CROP PLANNING TO INCREASE AGRICULTURE PRODUCTION IN INDIA	CH SEKHAR	COMPUTER SCIENCE ENGINEERING	INTERNATIONAL JOURNAL OF ADVANCED SCIENCE AND TECHNOLOGY	2018	<a href="#">72</a>
60	ADAPTIVE FUZZY PI CURRENT CONTROL OF GRID INTERACT PV INVERTER	R.S. RAVI SANKAR	INFORMATION TECHNOLOGY	INTERNATIONAL JOURNAL OF ELECTRICAL AND COMPUTER ENGINEERING	2018	<a href="#">73</a>
61	HISTOGRAM BASED FACE RECOGNITION	CH.SRINIVASA REDDY	INFORMATION TECHNOLOGY	IMANAGER	2018	<a href="#">74</a>
62	HANDWRITING RECOGNITION USING HAAR TRANSFORM	K.LEELA PRASAD	INFORMATION TECHNOLOGY	IUP JOURNAL OF COMPUTER SCIENCES	2018	<a href="#">75</a>
63	A DETAILED REVIEW ON MOBILE AD HOC NETWORK NETWORKS: PROTOCOLS, SECURITY ISSUES AND CHALLENGES	N.TIRUPATHI RAO, P.SRINIVAS	COMPUTER SCIENCE ENGINEERING	INTERNATIONAL JOURNAL OF SECURITY AND ITS APPLICATIONS	2018	<a href="#">76</a>
64	SIMULATION ON ROUTING-TOWARD-PRIMARY-USER (RPU) ATTACK AND BELIEF DISSEMINATION-BASED DEFENSE IN COGNITIVE RADIO NETWORKS	P.ANUSHA	INFORMATION TECHNOLOGY	INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH IN COMPUTER AND COMMUNICATION ENGINEERING	2018	<a href="#">77</a>



65	ON RICCI PSEUDO-SYMMETRIC PARA-KENMOTSU MANIFOLDS	DR. S. SUNITHA DEVI	ELECTRONICS AND COMMUNICATION ENGINEERING	NEW TRENDS IN MATHEMATICAL SCIENCES	2018	<a href="#">78</a>
66	ON A CLASS OF P-KENMOTSU MANIFOLDS ADMITTING WEYL-PROJECTIVE CURVATURE TENSOR OF TYPE (1, 3)	DR. S. SUNITHA DEVI	BASIC SCIENCE & HUMANITIES	TURKISH JOURNAL OF ANALYSIS AND NUMBER THEORY	2018	<a href="#">79</a>
67	MULTIFERROIC AND MAGNETOELECTRIC STUDIES ON BMFO-NZFO NANOCOMPOSITES	DR DHANA LAKSHMI B	BASIC SCIENCE & HUMANITIES	APPLIED PHYSICS A	2018	<a href="#">80</a>
68	PREPARATION, CHARACTERIZATION AND PTCR BEHAVIOR OF CALCIUM BARIUM NIOBATE FERROELECTRIC CERAMICS	DR DHANA LAKSHMI B	BASIC SCIENCE & HUMANITIES	AIP CONFERENCE PROCEEDINGS	2018	<a href="#">81</a>
69	IMPLEMENTING ROBOTS IN DEFENCE THROUGH MOTION CAPTURE WITH MIXED REALITY	YELLAMMA P.;BHARADWAJ C.M.;KRISHNA SAI K.R.;NARASIMHAM C.	COMPUTER SCIENCE ENGINEERING	INTERNATIONAL JOURNAL OF ENGINEERING AND TECHNOLOGY(UAE)	2018	<a href="#">82</a>
70	A DISPARATENESS-AWARE SCHEDULING USING K-CENTROIDS CLUSTERING AND PSO TECHNIQUES IN HADOOP CLUSTER	LYDIA, E LAXMI AND SWARUP, M BEN	COMPUTER SCIENCE ENGINEERING	INTERNATIONAL JOURNAL OF ADVANCED NETWORK, MONITORING AND CONTROLS	2018	<a href="#">83</a>
71	TEXT MINING WITH LUCENE AND HADOOP: DOCUMENT CLUSTERING WITH UPDATED RULES OF NMF NON-NEGATIVE MATRIX FACTORIZATION	LYDIA, E LAXMI AND RAMYA, D	COMPUTER SCIENCE ENGINEERING	INTERNATIONAL JOURNAL OF PURE AND APPLIED MATHEMATICS	2018	<a href="#">84</a>
72	CORRELATING NOSQL DATABASES WITH A RELATIONAL DATABASE: PERFORMANCE AND SPACE	LYDIA, E LAXMI AND SHANKAR, K AND PAMINA, J AND RAJA, J BESCHI	COMPUTER SCIENCE ENGINEERING	INTERNATIONAL JOURNAL OF PURE AND APPLIED MATHEMATICS	2018	<a href="#">85</a>
73	GENERATION OF DYNAMIC ENERGY MANAGEMENT USING DATA MINING TECHNIQUES BASING ON BIG DATA ANALYTICS ISSUES IN SMART GRIDS	LAXMI LYDIA E.;PRASANNA KUMAR B.;RAMYA D.	COMPUTER SCIENCE ENGINEERING	INTERNATIONAL JOURNAL OF ENGINEERING AND TECHNOLOGY(UAE)	2018	<a href="#">86</a>



74	HANDLING OF BIG DATA WITH A NOVEL SOLUTION ARCHITECTURE ON SMART GRIDS	LYDIA, E LAXMI AND VIDHYAVATHI, RM AND REBECCA, A KAVEENA AND SUMATHI, K	COMPUTER SCIENCE ENGINEERING	INTERNATIONAL JOURNAL OF PURE AND APPLIED MATHEMATICS	2018	<a href="#">87</a>
75	APPLYING COMPRESSION ALGORITHMS ON HADOOP CLUSTER IMPLEMENTING THROUGH APACHE TEZ AND HADOOP MAPREDUCE	LYDIA, DR E LAXMI AND SRINIVASARAO, M	COMPUTER SCIENCE ENGINEERING	INTERNATIONAL JOURNAL OF ENGINEERING & TECHNOLOGY	2018	<a href="#">88</a>
76	DETECTION AND FIRE CEASING USING ROBO AUTOMATION	KARTHIK, K AND RAJAPRAKASH, S AND JAICHANDRAN, R AND SOMASUNDARAM, K	COMPUTER SCIENCE ENGINEERING	INTERNATIONAL JOURNAL OF PURE AND APPLIED MATHEMATICS	2018	<a href="#">89</a>
77	STUDIES ON THE TMS USING IR SENSORS FOR AVOIDING CONGESTION IN TRAFFIC ON INDIAN CITY ROADS	N. THIRUPATHI RAO AND DEBNATH BHATTACHARYYA	COMPUTER SCIENCE ENGINEERING	INTERNATIONAL JOURNAL OF CONTROL AND AUTOMATION	2018	<a href="#">90</a>
78	SECURITY ISSUES AND ROUTING CHALLENGES ON MOBILE AD-HOC NETWORKS: AN EXTENSIVE REVIEW	N. THIRUPATHI RAO	COMPUTER SCIENCE ENGINEERING	INTERNATIONAL JOURNAL OF SECURITY AND ITS APPLICATIONS	2018	<a href="#">91</a>
79	BLACK HOLE ATTACKS ON WSNS USING DISCRETE SIMULATOR: AN EXTENSIVE REVIEW	N. THIRUPATHI RAO, DEBNATH BHATTACHARYYA	COMPUTER SCIENCE ENGINEERING	INTERNATIONAL JOURNAL OF SECURITY AND ITS APPLICATIONS	2018	<a href="#">92</a>
80	SECURITY ISSUES AND ATTACKS IN WIRELESS SENSOR NETWORKS: SOME CASE STUDIES	N. THIRUPATHI RAO, DEBNATH BHATTACHARYYA AND TAI-HOON KIM	COMPUTER SCIENCE ENGINEERING	INTERNATIONAL JOURNAL OF SECURITY AND ITS APPLICATIONS	2018	<a href="#">93</a>
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# Design of DFIG Converters to Overcome Grid Faults Using Improved Stator Flux Based Field Oriented Control and STATCOM Controller

D. V. N. Ananth<sup>1</sup> · G. V. Nagesh Kumar<sup>2</sup>

Received: 30 April 2015 / Accepted: 5 September 2018  
© Springer Nature Singapore Pte Ltd. 2018

## Abstract

The doubly fed induction generator based wind energy conversion system is attracting the energy production market for the last decade. It is due to the facts like large rating single unit, withstand to grid disturbances, independent real and reactive power flow control and mainly low power converter ratings. However, under severe short circuit faults, the doubly fed induction generator (DFIG) is constrained to be in synchronism with the grid as is posed by the modern grid codes. For this, dynamic and transient response of DFIG converter unit control needs to be modified for sustainability and reliability. The article will show that DFIG will follow better grid code requirements using proposed improved stator flux based field oriented control scheme in Rotor Side Converter. Further, a three levels STATCOM controller is externally placed near the grid point to further increase its capability under transients. This can be achieved by minimizing DC offset currents to zero by controlling stator flux decay during transients. The stator d and q axis flux wave is circular during steady state and also deviate its shape and characteristics during transients. This feature is restored using proposed FOC technique and helps in maintaining a minimum voltage and current in rotor and stator circuit. This technique not only improves LVRT but also ensures a longer lifetime of the machine during major disturbances.

**Keywords** DFIG · Field oriented control · LVRT · STATCOM

## Introduction

Among different wind turbine based generators, the Doubly Fed Induction Generator is prominent due to its maximum power extraction capability, variable speed generator running operation, and strong reactive power control, sustaining operation under low voltage and high voltage faults, economically feasible back to back converters and independent and quicker real and reactive power flow control. The reactive power control ability and competence enhancement is obtained with help of rotor side control (RSC) with

25 to 35% rating converter letting  $\pm 25\%$  variation in the rotor speed [1, 2].

Based on severity of the fault, the high voltages and/or currents will enter into the rotor windings and will damage the rotor side power electronic converters. Several FRT methods for DFIG wind turbine (WTs) have been proposed in the literature to enhance the transient stability [3, 4]. When a three phases to ground grid fault occurs, a DC offset part of flux is produced in the sensitive DFIG stator, tending the rotor windings to effectively pump surge current into the RSC [5]. This surge current will damage the rotor side converter and the dc link capacitor as their rating is low. Likewise, asymmetric faults induce negative sequence flux components results in high currents with real and reactive power and electromagnetic torque oscillations [6–8]. Hence controlling this over current, crowbar circuit [9] is generally used to avoid which disable DFIG and makes grid into more dangerous state. So, advanced vector control techniques etc., are used to improve fault current and voltages of stator and rotor and to damp power and electromagnetic torque oscillations. However above methods in RSC does not provide significant reduction in rotor over currents.

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# Document details - Characterization and electrical conductivity of Ionic oxide nano films by Dc and Ac methods

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ARPJ Journal of Engineering and Applied Sciences

Volume 13, Issue 24, 1 December 2018, Pages 9737-9740

## Characterization and electrical conductivity of Ionic oxide nano films by Dc and Ac methods(Article)

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### Abstract

We report here the ionic conductivity characteristics of single crystal of Yttria Stabilized Zirconia (YSZ) < 100 > . The targets of YSZ of one-inch diameter and about 2-3 mm thickness were palletized and sintered in the range of 1000-15000 C for 2-4 hours in air. These targets were polished up to 1000 emery paper cleaned in an ultrasonic bath containing methanol. The ionic conductivity was measured using both AC impedance spectroscopy and DC four probe technique. An idealized plot for the spectrum of a ceramic oxide specimen with particularly blocking electrodes has been studied. The ionic conductivity of ceramic oxide was compared with YSZ < 100 > .The investigation showed that the advantage of AC method is to separate the bulk, grain boundary and electrode resistance which is not possible by DC method. A single crystal of YSZ < 1 00 > was experimented for ionic conductivity. The ionic conductivity and activation energy of YSZ < 100 > at 973 K were found to be almost same in both DC and AC method which seems to be because of absence of grain boundary. © 2006-2018 Asian Research Publishing Network (ARPJ).

### Author keywords

Activation energetic method

D.C method

Grain boundary

Impedance spectroscopy

Ionic conductivity

ISSN: 18196608

Source Type: Journal

Original language: English

Document Type: Article

Publisher: Asian Research Publishing Network

Padhi, S.N.; Koneru Lakshmaiah deemed to be University Vijayawada, India;

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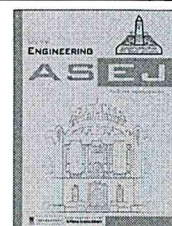
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## ELECTRICAL ENGINEERING

# UKF based estimation approach for DVR control to compensate voltage swell in distribution systems

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Received 30 November 2015; accepted 6 February 2016

## KEYWORDS

Unscented Kalman Filter;  
Extended Kalman Filter;  
Dynamic Voltage Restorer;  
Voltage swell and distribution system

**Abstract** The Dynamic Voltage Restorer (DVR) is identified as the best solution for mitigation of voltage sag and swell related problems in the much tapped distribution system. The compensation performance of the DVR very much depends on its control algorithm. In the paper, an estimation method based on Unscented Kalman Filter (UKF) is proposed for mitigating the voltage swell concern. The proposed UKF based estimation technique is used to assist the control algorithm for generating reference signals of Voltage Source Converter (VSC) of DVR. DVR presents the compensation voltage as output which is included in the connected line. With this estimation method, voltage swell issues are discovered with accuracy and faster performance to retract out the swell problem in sensitivity load linked distribution systems. In MATLAB/Simulink platform the suggested method is executed and its performance is assessed and contrasted with the Linear Kalman Filter (LKF) and Extended Kalman Filter (EKF).

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## 1. Introduction

Nowadays power quality (PQ) is a crucial issue to companies which are operating in a highly competitive business environment, because it affects the profitability in terms of both time and money. Hence there are always demands for good power quality. But due to the use of modern industrial devices such

as semiconductor devices, programmable logic controllers and electronic devices PQ problems have gained more interest. These devices are more sensitive to power quality disturbances such as voltage sags/swells, flicker, harmonics distortion, impulse transient, and interruptions [1]. Voltage sag/swell is considered as to be the most severe disturbances among them [2]. Voltage sag/swell is characterized by magnitude and duration of sag/swell. Voltage swell is defined as an increase in rms voltage or current at the power frequency for durations from 0.5 cycles to 1 min. Typical magnitudes are between 1.1 and 1.8 up. Swell magnitude is also described by its remaining voltage; in this case, it is always greater than 1.0 [3]. Common causes for voltage swell are switching off a large load, energization of a capacitor bank, etc. [1]. The effect of voltage swell is control delay, tripping, overheating and many times

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Peer review under responsibility of Ain Shams University.



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<http://dx.doi.org/10.1016/j.asej.2016.02.001>

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Please cite this article in press as: SasiKiran P, Manohar TG, UKF based estimation approach for DVR control to compensate voltage swell in distribution systems, Ain Shams Eng J (2016), <http://dx.doi.org/10.1016/j.asej.2016.02.001>



# Cite this article

Varadala AB, Gurugubelli SN and Bandaru S  
Equal-channel angular extrusion of Al 5083 alloy with copper shielding.  
*Emerging Materials Research*,  
<https://doi.org/10.1680/jemmr.18.00043>

# Research Article

Paper 1800043

Received 20/05/2018; Accepted 14/08/2018

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Keywords: alloys/material properties/  
material structure

## Equal-channel angular extrusion of Al 5083 alloy with copper shielding

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The microstructural homogeneity, hardness and tensile strength of aluminium alloy 5083, with and without copper shielding (CS), processed by equal-channel angular extrusion (ECAE) are investigated in this work. The two opposite longitudinal faces of the rectangular billets are shielded with copper sheets of various thicknesses (1.0, 1.5, 2.0 and 2.5 mm) and ECAE'd at room temperature in route A (no rotation of billet) up to four times. The required extrusion load is drastically reduced due to the smaller coefficient of friction between the CS and channels of the steel die. The shielded copper reduces the effect of the dead metal zone and microcracks and improves strain uniformity in the extruded alloy. The hardness and tensile strength of the extruded alloy with CS are increased extensively due to newly formed submicron-sized grains in the homogeneous structure. Also, the ductility of ECAE'd alloy with CS is higher compared to that of the alloy extruded without shielding. It is noticed that the increase in the thickness of CS does not have a noteworthy effect on the structural and mechanical behaviour of the extruded alloy.

### 1. Introduction

The need for lightweight aluminium (Al) alloys (AAs) with high strength and hardness is very high in various engineering applications, including aerospace, defence and automobiles.<sup>1,2</sup> Materials with submicron grains and better mechanical properties can be developed using severe plastic deformation (SPD) processes.<sup>3,4</sup> The high amount of strain induced in the materials, processed through SPD techniques, refines the grain size and improves mechanical properties.<sup>5,6</sup> Equal-channel angular extrusion (ECAE) is a widely used SPD technique and produces submicron-sized grains in the material without any cross-sectional changes.<sup>7,8</sup> A die with two similar cross-sectioned channels, with a specified channel intersection angle ( $\Phi$ ) and outer corner angle ( $\Psi$ ), is used to perform the ECAE process.<sup>9</sup> During the process of ECAE, a high amount of strain is induced in the extruded material.<sup>10</sup> The dead metal zone, formed at the outer corner of the die, imposes non-uniform strain distribution, which affects the structural homogeneity of the extruded alloy.<sup>11</sup> In 2012, Djavanroodi *et al.*<sup>12</sup> investigated the significance of the processing route on the strain distribution and found that it is very less when following the processing route A. Shaeri *et al.*<sup>13</sup> performed ECAE on AA 7075 with copper casing and found significant improvement in the strain distribution and mechanical properties. Djavanroodi *et al.*<sup>14</sup> assessed the effect of processing routes (A, B<sub>A</sub>, B<sub>C</sub> and C) on the uniform distribution of strain and

the hardness of the copper tube. They reported that structural homogeneity and hardness are less in processing route A. From the literature, it is observed that the structural and mechanical behaviour of square and rectangular billets shielded with copper processed in route A needs to be investigated.

In this study, ECAE of aluminium 5083 alloy with copper shielding (CS) of various thicknesses was performed at room temperature in route A. The significance of shielding and its thickness on the grain refinement, microhardness and tensile strength of AA 5083 were investigated.

### 2. Experimental section

AA 5083 with 4.5% magnesium (Mg) is considered as the work material in this study. Square and rectangular billets of various dimensions were sectioned from as-received rolled plate in O-grade condition. The geometry, dimensions and notations of the billets and CS are listed in Table 1. All the faces of the billets were prepared with more surface finish to reduce the coefficient of friction during ECAE. Copper sheets with 1.0, 1.5, 2.0 and 2.5 mm thicknesses were used as shielding to the rectangular billets due to their high ductility. Initially, all the billets and copper sheets were annealed for 1 h at 530 and 400°C, respectively. Oil-hardened non-shrinking steel was used as die material. The ECAE die used in this study had a channel angle





# Document details - Modeling of enhancement effect of moth-eye antireflective coating on organic light-emitting diode

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Journal of Nanophotonics
Volume 12, Issue 4, 1 October 2018, Article number 046021

## Modeling of enhancement effect of moth-eye antireflective coating on organic light-emitting diode(Article)

Muniraju, C.B., Muniswamy, V., Yellareswara Rao, K., Krishnaswamy, N.   
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### Abstract

A moth-eye antireflective coating (M-ARC) on the surface of a glass substrate is reported for enhanced efficiency of an organic light-emitting diode (OLED). The M-ARC reflects the light trapped in the substrate modes of the device. Fresnel's theory was applied to study the reflection and absorption of light on the M-ARC. The effect of the M-ARC on the OLED for light out-coupling efficiency was analyzed using the finite-difference time-domain method. The improvement in light extraction efficiency of the OLED was optimized by investigating the parameters of pitch, thickness, refractive indices, and height of the M-ARC. The enhancement in peak extraction efficiency of the moth-eye-based OLED as a function of wavelength is ~3.0 compared to conventional OLEDs. © 2018 Society of Photo-Optical Instrumentation Engineers (SPIE).

### Author keywords

- antireflective coating
- biomimetic design
- finite-difference time-domain analysis
- Fresnel theory
- optimization
- organic light-emitting diode

### Indexed keywords

- Engineering controlled terms:
- Antireflection coatings
  - Biomimetics
  - Efficiency
  - Extraction
  - Finite difference time domain method
  - Light
  - Optimization
  - Refractive index
  - Substrates
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- Anti reflective coatings
  - Biomimetic design
  - Enhanced efficiency
  - Enhancement effects
  - Extraction efficiencies
  - Fresnel theory
  - Light-extraction efficiency
  - Out-coupling efficiency
- Engineering main heading:
- Organic light emitting diodes (OLED)

### Funding details

Funding sponsor	Funding number	Acronym
	YSS/2015/000382	
Department of Science and Technology, Ministry of Science and Technology, India See opportunities by  डीएसटी		डीएसटी
Science and Engineering Research Board See opportunities by SERB		SERB

### Cited by 2 documents

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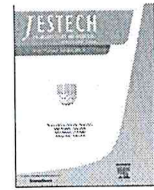
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## Full Length Article

# Mitigation of field stress with metal inserts for cone type spacer in a gas insulated busduct under delamination

Jagadeesh Adari <sup>a</sup>, Venkata Siva Krishna Rao Gadi <sup>b</sup>, Venkata Nagesh Kumar Gundavarapu <sup>c,\*</sup><sup>a</sup> Department of EEE, GITAM University, Visakhapatnam, India<sup>b</sup> Department of EEE, Andhra University, Visakhapatnam, India<sup>c</sup> Department of EEE, Vignans Institute of Information Technology, Visakhapatnam, India

## ARTICLE INFO

### Article history:

Received 20 November 2016

Revised 21 May 2018

Accepted 27 June 2018

Available online 21 July 2018

### Keywords:

Gas insulated busduct

Insulation

Insulator

Electric field

## ABSTRACT

Increased power demand and energy density in cities resulted in the establishment of Gas insulated systems (GIS) as a substitute for the conventional air-insulated substations. Reliable and efficient design of the modules in GIS has been a major concern for the power engineers. Major dielectric strength breakdown and surface flashover causes were reported due to insulator failures like excessive field enhancements at the triple point junction formed by the electrode-gas-insulator interface. The insight of reducing the field along the surface of the spacer exhaustive field study was carried out on a conical spacer. Initially, a field study was carried out with a normal type spacer then extended to a molded spacer done with various shapes to obtain an optimal field spread. This Shape control may sometimes lead to very uneven shapes. Further, a functional graded material (FGM) is designed for the standard cone type spacer to obtain uniform field stress along the surface of a spacer to overcome the above problem. The grading of the spacer is done with different permittivities. Electric field is computed for different cases of graded spacers and Tuned Metal inserts and recessed electrodes were also imbibed in the spacer geometry for a better field distribution. The work was validated by comparing the optimal mold spacer field distribution with that of the FGM cone type spacer. In spite of proper care taken during the manufacture, working, and maintenance of the spacers several flaws do occur. The delamination effect is considered and similar analysis is carried out and the results are presented and analyzed.

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## 1. Introduction

Gas insulated systems are in wide usage since late 1960s due to the rapid growth in energy consumption under the constraint of urbanization. The major components in the system are SF<sub>6</sub> gas, spacers, conductor and outer enclosure. Solid insulators in GIS are employed to give mechanical support to the conductor in Gas insulated busduct. Apart from mechanical support they do the job of providing the clearance between the high voltage electrode and outer enclosure. Precise modeling of the spacers is an important factor for power engineers as major flashovers report the failure of these supporting structures called spacers. Excessive field intensity at the gas–electrode–spacer interface called the triple junction is the problem that needed to be answered. On the other hand in spite of the care taken during the manufacture, running and maintenance of the spacers there is every possibility of existence of

certain latent defects like delamination, protrusion, voids, etc. These defects have a wide impact on the insulation strength of the system during its operation reflecting its life.

Maren Istad et al. [1] has studied proper insulation enhancement and coordination among the various components in a Gas Insulated system is of great concern in the power industry. Cookson et al. [2] identified that Spacer failures were one of the causes in the dielectric strength breakdown and surface flashover in the system. Partial discharge phenomena, Electric field distribution along the surface was considered as measures in determining the possibility of dielectric strength breakdown. On the other hand reports reveal the presence of certain latent defects like delamination (loss of adhesive), voids, cracks, etc on the surface of the spacers, though the spacers had undergone various tests during manufacture and maintenance process. These defects do influence the field distribution in turn leading to the failure of the spacer. Effective means of controlling the field spread along the surface of the spacer and reducing the field at the triple point junction is a way in which the insulation strength and coordination can be increased.

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Peer review under responsibility of Karabuk University.



# EEC-FM: Energy Efficient Clustering based on Firefly and Midpoint Algorithms in Wireless Sensor Network

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*Received October 28, 2017; revised January 1, 2018; accepted April 9, 2018;  
published August 31, 2018*

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## Abstract

Wireless sensor networks (WSNs) consist of set of sensor nodes. These sensor nodes are deployed in unattended area which are able to sense, process and transmit data to the base station (BS). One of the primary issues of WSN is energy efficiency. In many existing clustering approaches, initial centroids of cluster heads (CHs) are chosen randomly and they form unbalanced clusters, results more energy consumption. In this paper, an energy efficient clustering protocol to prevent unbalanced clusters based on firefly and midpoint algorithms called EEC-FM has been proposed, where midpoint algorithm is used for initial centroid of CHs selection and firefly is used for cluster formation. Using residual energy and Euclidean distance as the parameters for appropriate cluster formation of the proposed approach produces balanced clusters to eventually balance the load of CHs and improve the network lifetime. Simulation result shows that the proposed method outperforms LEACH-B, BPK-means, Park's approach, Mk-means, and EECPK-means with respect to balancing of clusters, energy efficiency and network lifetime parameters. Simulation result also demonstrate that the proposed approach, EEC-FM protocol is 45% better than LEACH-B, 17.8% better than BPK-means protocol, 12.5% better than Park's approach, 9.1% better than Mk-means, and 5.8% better than EECPK-means protocol with respect to the parameter half energy consumption (HEC).

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**Keywords:** clustering, firefly, midpoint, unbalanced clusters, overload clusters, cluster heads



# Document details - Equal channel angular extrusion of semicircular AA 5083 covered with copper casing

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Emerging Materials Research

Volume 7, Issue 3, 8 August 2018, Pages 160-163

## Equal channel angular extrusion of semicircular AA 5083 covered with copper casing(Article)

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### Abstract

The microstructural evolution and mechanical behaviour of semicircular AA 5083 billets subjected to equal channel angular extrusion (ECAE), without and with copper casing (CC), are investigated in this work. The semicircular billets, circumferentially covered with and without CC, are extruded up to three passes in route A at room temperature. Even the coarse grain structure of the initial material is significantly refined, the microcracks and the structural defects were observed in the billets extruded without CC due to non-uniform strain distribution. The use of CC on the circumference of the semicircular billets reduces the dead zone effect on the structural homogeneity and minimises the formation of microcracks on the outer periphery of the extruded material. The uniform distribution of the effective strain imposed on the billets ECAE'd with CC enhances the development of equi-axed ultrafine grains at low pressing loads. The newly formed ultrafine grains with a size of few hundreds of nanometres significantly increase the mechanical properties of the ECAE'd AA 5083 with the CC. The obtained results were in good agreement with the earlier reports in which ECAE was carried with back pressure arrangement. © 2018 ICE Publishing: All rights reserved.

### SciVal Topic Prominence

Topic: Equal Channel Angular Pressing | Superplasticity | Plastic Deformation

Prominence percentile: 99.001

### Author keywords

alloys material structure mechanical properties

### Indexed keywords

Engineering controlled terms:

Alloying Billets (metal bars) Copper Extrusion Microcracks

Engineering uncontrolled terms:

Equal channel angular extrusion Extruded materials Material structure Mechanical behaviour Non-uniform strain Structural defect Structural homogeneity Uniform distribution

Engineering main heading:

Mechanical properties

### Cited by 1 document

Varadala, A.B., Gurugubelli, S.N., Bandaru, S.

An Effective and Economical Method to Improve Structural Homogeneity and Mechanical Properties of Al-Mg Alloy Processed by ECAE

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# A Novel Technique for Controlling Speed and Position of Bearingless Switched Reluctance Motor Employing Sensorless Sliding Mode Observer

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Received: 13 September 2017 / Accepted: 3 December 2017  
© King Fahd University of Petroleum & Minerals 2017

## Abstract

High-speed motors working in harsh environments such as high temperatures, radiation, and poisonous substances are limited because of motor breakdown due to vibrations of mechanical bearings. The concept of magnetic bearings is an alternative to the issues of slide or ball bearings because of its advantages of friction-free, negligible thermal problems, and lubrication free. Rotor vibration control during start-up, acceleration and deceleration phases are one of the key problems besides stable levitation, in high-speed applications of bearingless switched reluctance motor (BSRM). The use of linear control strategies alone is not effective in suppressing vibration due to residual unbalance and external disturbances. In this paper, a global sliding mode controller (GSMC) is proposed to control the speed and position of BSRM and also sensorless operation with sliding mode observer. In this method, rotor displacement tracking error functions are used in the sliding mode switching functions and the new sliding mode displacement control and speed tracking equations are obtained with an extra exponential fast decaying nonlinear function along with conventional linear sliding mode switching surface. Simulation is carried on 12/14 BSRM with the proposed controller and observer and the results of rotor displacements and speed are presented. In addition to the improvement of performance characteristics when compared to sliding mode controller, GSMC cancels the reaching mode, reduce the chattering, and overcome the disturbance and the time delay.

**Keywords** Sliding mode control · Asymmetric converter · Bearingless · Hysteresis controller · Rotor displacement · Sliding mode observer

## List of symbols

$m$	Mass, kg	$K_{xyp}, K_{yyp}, K_{xyp},$ $K_{yxp}$ and $K_{xxn}, K_{yyn},$ $K_{xyn}$ and $K_{yxn}$	Equivalent suspension force constants in $x$ and $y$ and positive in both negative directions, respectively
$g$	Gravitational force in $y$ direction	$I_x$ and $I_y$	Suspension current matrices in $x$ and $y$ -axis, respectively, A
$F_x$ and $F_y$	Suspension forces in the directions of $X$ – $Y$ from origin, respectively, N	$i_{xp}, i_{yp},$ $i_{xn}, i_{yn}$	Individual suspension currents in $x$ and $y$ axis in both positive and negative directions, respectively
$K_X$ and $K_Y$	Suspension force equivalent constant matrices in $x$ and $y$ axis	$\psi$	Flux linkages per phase, V/s
		$r$	Resistance per phase, $\Omega$
		$N$	Reversal of phase inductance, per henry
		$\theta$	Rotor position per phase, °
		$V$	Phase voltage, V
		$w$	Rotor speed, rpm
		$T_l$ and $T_e$	Load torque applied and net electromagnetic torque produced, N-mt

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# A Hybrid Approach for Identification of Manhole and Staircase to Assist Visually Challenged

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**ABSTRACT** Recognition of an object is a bare minimum restraint for an individual in order to sort out or classify the type of the object. This situation becomes a tricky experience with respect to the blind persons; therefore to assist visually challenged persons, in particular, while recognizing the staircases and manholes, a prototype of mobility recognition is presented using Feature Vector Identification and Sensor Computed Processor Arduino chips. This prototype provides more sovereignty to the sightless people while walking on the roads and helps to pass through on their own without any backing. This prototype is developed using Arduino kit along with feature detection module and helps the visually challenged in reaching their destinations with ease. A low weight stick is built to facilitate the visually challenged people towards effective recognition of the obstacles. In order to recognize the manholes, the chip is programmed and embedded in the stick which also holds the code for detection of the staircases based on Bivariate Gaussian Mixture Model (BGMM); SURF algorithm is considered for extraction of features. The developed model shows an accuracy of around 90% for manhole detection and 88% for staircase detection.

**INDEX TERMS** Arduino Kit, Feature Selection, Ultrasonic Sensor, Frequency Spectrum, BGMM Classification.

## I. INTRODUCTION

Moving around unfamiliar surroundings is an exigent task for the visually impaired persons due to their deficiency in eyesight. According to the latest survey, around 1.5 million people in India are visually challenged and are facing a hardship in performing their day to day activity. This population is about 170 million worldwide and as per the latest statistics, this number is increasing by 10% annually [1].

Staircases pose a major problem in navigation, and their recognition is of prime importance for the visually impaired. Many different kinds of sensors, like monocular [2, 3, 4, 5] and stereo cameras [6, 7, 8], depth sensors [9, 10], or laser scanning [11] devices (e.g., LiDAR), have been used for detecting staircases.

Monocular image based methods generally detect staircases by detecting non-ground plane regions and identifying pattern of concurrent lines resembling staircases in those regions. For example, [5] proposed a Gabor filter based texture detection method to detect distant staircases. They estimated the staircase pose by homograph search model. Reference [12] extended this using motion stereo. Reference [13] detected staircases only from RGB image by performing Hough transform to extract concurrent parallel

lines in an edge map image resulting from Sobel operator. Reference [7] optimally detected staircase in real time using stereo imagery to estimate ground plane and temporal consistency, but did not classify up/down stairs separately. Reference [8] incorporated a stereo camera into the white cane and used actuators for guidance and distance feedback. Reference [9] proposed an RGBD image-based detection approach of stairs, pedestrian crosswalks, and traffic signs, which achieved decent detection rate in the staircase detection, but did not handle the escalator detection. However, some items which contain parallel lines such as bookshelves could be misclassified as stairs and pedestrian crosswalks. Reference [10] presented an efficient optical flow based stair tracking algorithm using Hough transform for parallel line detection and a SVM Classifier to detect indoor staircases and recognize the types of staircases by using RGBD videos captured via RGB-D camera mounted at the chest position. Reference [11] used array of Lidars and vibrotactile units to detect obstacles and features including up/down staircases. The system is time consuming to get used to by a visually impaired user and needs to adapt to the rate of motion of the user.

In Indian context, open manholes pose another critical risk. Ultrasonic sensors have been used extensively in obstacle



# Document details - Analysis of stresses of graphite /epoxy composite plate using HYPERMESH

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International Journal of Mechanical and Production Engineering Research and Development

Volume 8, Issue 3, 30 June 2018, Pages 375-384

## Analysis of stresses of graphite /epoxy composite plate using HYPERMESH(Article)(Open Access)

Rama Krishna, C.H., Kumar, M., Kiran, M., Divya, B.

Vignan's Institute of Information Technology, Visakhapatnam, Andhra Pradesh, India

### Abstract

In recent years, usages of composite materials have progressed in automobile, aerospace industries and it is one of the alternatives for metal materials. This trend is because of their high strength to weight ratio and also it is possible to manufacture components as per required mechanical properties. Therefore the role of stresses is very important in composites. Hence an accurate understanding of their structural behavior is required, such as stresses both normal and shear stresses. Numerical analysis has been carried out for Graphite/Epoxy Composite laminate to find the stresses of a laminated composite plate subjected to axial loads along X & Y directions of the specimen. In the numerical method, the stresses are developed for plies of orientation ( $0^\circ/30^\circ/-45^\circ$ ) in the laminated composite and simulate the numerical values developed using HYPERMESH 13.0 for validation. This work presents a stress analysis of Graphite/Epoxy laminated composite plate. In the present work, the stress behavior of laminated composite plates under Tensile loading using a four-node element with six degrees of freedom at each node and translations in the x and y directions is done. The static stress analysis includes the all types of stress behavior in diagrammatic form and results are plotted for investigation. In the present study, the modeling is done in HYPERMESH 13.0. The study investigations were carried on plates starting with three layers of the top location of  $0^\circ$  angle -ply laminated composite plates at the clamped boundary condition. This work also contains, a number of Finite element analyses carried out for various aspect ratios and modulus ratios to study the effect of stresses of laminated composite plates subjected to tensile load. The HYPERMESH results showed, on the stresses. The effect of increasing the aspect ratio is to decrease the stresses. The composite plate has been analyzed various modulus ratios and their effects on stresses so as to find the optimized conditions. © TJPRC Pvt. Ltd.

### Author keywords

[Aspect ratio](#) [HYPERMESH 13.0](#) [Laminated composite Plate](#) [Modulus ratio](#) [Numerical method](#) [Ply orientation](#)

ISSN: 22496890

Source Type: Journal

Original language: English

DOI: 10.24247/ijmperdjun201841

Document Type: Article

Publisher: Transstellar Journal Publications and Research Consultancy Private Limited (TJPRC)

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# Document details - Residual stresses analysis of laminated graphite/epoxy composite plates using HYPERMESH

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International Journal of Mechanical and Production Engineering Research and Development

Volume 8, Issue 3, 30 June 2018, Pages 247-256

## Residual stresses analysis of laminated graphite/epoxy composite plates using HYPERMESH(Article)(Open Access)

S. Ramakrishna, C.H., Ganesh, M.R., Rao, R.V., Dharmateja, P.

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### Abstract

The structures made of laminated composites are used in various engineering applications like in military, aerospace and automotive Industries. To design the composite, the precision learning of structural behavior is required. In this connection, estimation of residual stresses is an important criterion for predicting the behavior of laminated composite. Residual stresses are developed when the laminate is subjected to temperature change. The residual stresses of the composite laminate are estimated by considering the temperature change of  $-75^{\circ}$  on the specimen and analytical method is used for the same. In the analytical method, the stresses are developed for piles of orientation ( $0^{\circ}/90^{\circ}$ ) in the laminated composite and simulate the analytical values with numerical analysis is developed for validation. This study aims to examine the residual stresses of the Graphite/Epoxy layer composite through analytical and simulated methods using HYPERMESH. The residual stress analysis includes all the types of stress behavior in diagrammatic form and results are developed. For validation, the simulated values and the analytical values are compared with the required accuracy. © TJPRC Pvt. Ltd.

### Author keywords

[Analytical method](#) [Hypermesh](#) [Laminate composite](#) [Numerical analysis](#) [Residual stress](#)

ISSN: 22496890

Source Type: Journal

Original language: English

DOI: 10.24247/ijmperdjun201828

Document Type: Article

Publisher: Transstellar Journal Publications and Research Consultancy Private Limited (TJPRC)

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## Research articles

## Cation distribution of Ni-Zn-Mn ferrite nanoparticles

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## ARTICLE INFO

## Article history:

Received 12 November 2016

Received in revised form 14 February 2018

Accepted 26 February 2018

Available online xxxx

## Keywords:

Ni-Zn ferrite nanoparticles

Sol-gel autocombustion

Cation distribution

Rietveld refinement

Magnetic properties

## ABSTRACT

Mn substituted Ni-Zn ferrite nanoparticles,  $\text{Ni}_{0.4}\text{Zn}_{0.6-x}\text{Mn}_x\text{Fe}_2\text{O}_4$  ( $x = 0.00-0.25$  in steps of 0.05), using metal nitrates were prepared by sol-gel autocombustion in citric acid matrix. The samples were examined by X-ray diffraction and vibrating sample magnetometer techniques. Rietveld structural refinements using the XRD data were performed on the samples to consolidate various structural parameters like phase (spinel), crystallite size (24.86–37.43 nm), lattice constant (8.3764–8.4089 Å) etc and also to determine cation distributions based on profile matching and integrated intensity ratios. Saturation magnetization values (37.18–68.40 emu/g) were extracted from the measured M–H loops of these nanoparticles to estimate their magnetic moments. Experimental and calculated magnetic moments and lattice constants were used to confirm the derived cation distributions from Rietveld analysis. The results of these ferrite nanoparticles are discussed in terms of the compositional modifications, particle sizes and the corresponding cation distributions as a result of Mn substitutions.

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## 1. Introduction

Ferrite nanoparticles are an important class of magnetic materials finding large number of applications in several fields including magnetic separation, biomedical and consumer electronics. Inexpensive raw materials, ease in synthesis and excellent magnetic performance make the ferrite nanoparticles attractive over their metal magnetic counterparts for these applications [1]. Further, the recent up-surge in the study of ferrites at nano-scales for power applications is mainly driven by the assumption of an enhanced structural and magnetic performance over their ceramic counterparts particularly in dealing with the limit due to domain wall resonance [2]. When the size of the ferrite nanoparticle is smaller than the critical size for multi-domain formation, the particle exists in a single domain state and obviously the domain wall resonance is avoided; thus the material can work at higher frequencies.

The properties of ferrite nanoparticles strongly depend on the chemical composition, synthesis method, particle size and associated cation distribution [3]. However, considering the vast potential for ferrite nanoparticles to be used as elements in application systems, it is desirable to carry out more investigations on ferrite nanoparticles using wet chemical methods. From

a close survey of the literature on various synthesis methods for generation of nanoparticles [4–7], it is found that the chemical methods provide better homogeneity and greater uniformity in particle size and size distribution. Among various low temperature chemical methods, the sol-gel autocombustion method, which is evolved from a combination of both sol-gel and combustion processes, is known to produce fully crystalline ferrite nanoparticles in larger yields using inexpensive raw materials with much ease in synthesis [8]. Therefore, in this work, it has been chosen to synthesize Mn substituted Ni-Zn ferrite nanoparticles using sol-gel autocombustion method.

It had been reported in many works that the cation distribution in ferrites is strongly dependent on particle size [9,10]. This is because smaller particles will have more non-interacting atoms on the surface leading to modified superexchange interactions resulting in spin canting which could be attributed to cationic inversion [11]. Therefore, it is felt necessary to undertake a systematic study of ferrite nanoparticles which describes a detailed cationic distribution taking into account the inversion degree parameter. Careful assignment of cations through the results of Rietveld structural analysis using Fullprof software and also by obtaining matching between theoretical and experimental data from X-ray and magnetic parameters would greatly help not only in finding required materials with desired electromagnetic characteristics but also in understanding the mechanisms responsible for cationic distribution and inversion parameter.

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# Document details - Modified wenner method for demarcation of saline belt 3-D projection

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International Journal of Civil Engineering and Technology

Volume 9, Issue 6, June 2018, Pages 938-943

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## Modified wenner method for demarcation of saline belt 3-D projection(Article)

Rao, G.V.V.R., Mukund, D., Pratap Das, R.

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### Abstract

Saline intrusion is a big challenge for the coastal terrains. As the bore wells are increasing and the output of rivers is decreasing, salt water of the sea is entering into the fresh water aquatics. There is a great need of studying the saline belt by demarcate the areas. © IAEME Publication.

### Author keywords

Schlumberger array

Sea water

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ISSN: 09766308

Source Type: Journal

Original language: English

Document Type: Article

Publisher: IAEME Publication

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## OPTIMAL UTILIZATION OF GENERATORS USING HARMONY SEARCH ALGORITHM FOR THE MANAGEMENT OF CONTINGENCY

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Received September 2017; revised December 2017

**ABSTRACT.** *In the modern world totally dependent on electric power, stable operation of the electrical system is absolutely necessary. Hence, optimal utilization of the existing power resources has become absolutely necessary. In this work, a procedure of optimal tuning of generators with harmony search algorithm in the existence of UPFC has been presented. The UPFC has been placed based on an index which is a composition of L-index and LUF index. A multi objective function has been chosen for tuning the generators. The multi-objective function consists of voltage deviation, generation cost and power loss. The presented technique has been examined and implemented on an IEEE 30 bus system for normal and for contingency condition.*

**Keywords:** Optimal reallocation, UPFC, Harmony search algorithm, Voltage stability

**1. Introduction.** Optimal power flow or optimal reallocation of generators consists of optimizing an objective function in the presence of operational constraints. Many methods have been developed so far to solve the OPF problem. In [1], Zhang et al. have proposed a modified multi-objective evolutionary algorithm based decomposition (MOEA/D) method to solve OPF. A modified Tchebycheff decomposition method has been utilized to obtain uniformly distributed Pareto-optimal solution. A solution to the OPF problem of the power systems has been obtained using various methods like improved colliding bodies optimization algorithm [2], particle swarm optimization [3], adaptive group search optimization [4], gray wolf optimizer [5], quasi-oppositional teaching learning based optimization [6], differential evolution optimization algorithm [7], and improved harmony search method [8].

FACTS devices play a very important role in further enhancing the effect of the solution to OPF problem of the power systems. Mahdad and Srairi [9] used adaptive flower pollination algorithm in combination with SVC for solving the OPF problem in case of faults in the generating units. Rao and Vaisakh [10] presented a result to multi-objective optimal power flow (MOOPF) problem utilizing an adaptive clonal selection algorithm



# Multiferroic and magnetoelectric studies on BMFO–NZFO nanocomposites

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Received: 11 October 2017 / Accepted: 24 April 2018  
© Springer-Verlag GmbH Germany, part of Springer Nature 2018

## Abstract

Bismuth ferrite-based multiferroic composites,  $x\text{Bi}_{0.95}\text{Mn}_{0.05}\text{FeO}_3 - (1-x)\text{Ni}_{0.5}\text{Zn}_{0.5}\text{Fe}_2\text{O}_4$ , where  $x$  takes the values of 0.2, 0.4, 0.5, 0.6 and 0.8, have been prepared by combining sol–gel autocombustion and solid-state methods. Phase identification of the samples was done by X-ray diffraction analysis. SEM–EDX measurements on the samples were used to evaluate the microstructural aspects and quantitative evaluation of the samples. Room temperature P–E loop measurements on the samples were done under the application of external electric fields in the range from 0 to 6 kV/mm at a frequency of 50 Hz to understand the ferroelectric strength of the compounds. Magnetic studies on the samples were made by M–H loop measurements in the field range of  $\pm 10$  kOe. Magnetoelectric coupling measurements were made using a dynamic lock-in test set-up. The results indicate that the mixing of nickel–zinc ferrite in  $\text{Bi}_{0.95}\text{Mn}_{0.05}\text{FeO}_3$ , in spite of the enhanced conductivity, has produced considerable improvements in saturation magnetization while retaining the remnant ferroelectric polarization in reasonable magnitudes to obtain improved M–E coupling. Among all the composites, the composite with  $x = 0.5$  has resulted better M–E performance.

## 1 Introduction

Multiferroic materials have recently attracted a great deal of interest because of their potential applications in information storage and magnetic field sensors [1, 2]. This new class of materials offers coexistence of long-range order associated with ferromagnetism as well as ferroelectricity [3]. It is believed that the coupling between magnetism and ferroelectricity in these materials could be exploited to induce electrical polarization by the application of magnetic field, and vice versa. Understanding the origin of the coupling is

essential to optimize material properties as well as device fabrication. Many efforts were made by different research groups to understand the fundamental characteristics and the physics involved in the study of multiferroics and coupling among order parameters within single phase as well as composite multiferroics [4, 5]. Among all the single-phase multiferroics, bismuth ferrite (BFO) is the widely investigated material due to its coexistence of ferroelectricity and magnetism at room temperature. It crystallizes into rhombohedrally distorted perovskite structure with space group  $R3c$  while forming spiral spin cycloid with a periodicity of 640 Å. The ferroelectric property of this compound originates from the  $6S^2$  lone pair electrons of Bi ion, whereas its G-type antiferromagnetic spin configuration with superimposed incommensurate cycloid spin structure leads only to weak magnetic properties [6]. Considerable attention has been devoted to understand the behaviour of BFO in different forms such as bulk, thin films and nanoparticles because of its promise for showing coupling strengths in reasonable magnitudes [7]. However, single-phase multiferroics even with chemical modifications are often inadequate to fulfill the requirements of magnetoelectric devices. Instead, composite multiferroics in which each phase presents a different “ferroic” property were reported to enhance the magnitude in the magnetoelectric (ME) coupling by several orders and

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## ROTOR LEVITATION AND VIBRATION CONTROL OF HYBRID POLE BSRM USING FUZZY SLIDING MODE CONTROLLER

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Received June 2017; revised October 2017

**ABSTRACT.** Rotor vibration control during startup, acceleration and deceleration phases is one of key problems besides stable levitation, in high-speed applications of bearingless switched reluctance motor (BSRM). The use of linear control strategies alone is not effective in suppressing vibration due to residual unbalance and external disturbance. This paper presents implementation of a nonlinear control method by integrating the features of fuzzy logic and the sliding mode control (SMC) to minimize the rotor vibration and eccentricity error of BSRM. The application of fuzzy SMC with the independent control of the radial force and rotational force guarantees stable levitation as well as the vibration reduction and the same is demonstrated with experimental results.

**Keywords:** BSRM, Radial force control, Fuzzy sliding mode controller, Rotor eccentricity

**1. Introduction.** High speed motors working in harsh environments such as high temperatures, radiation and poisonous substances are limited because of motor breakdown due to vibrations of mechanical bearings. The concept of magnetic bearings is an alternative to the issues of slide or ball bearings because of its advantages of friction-free, negligible thermal problems, and lubrication free. A magnetic bearing is an electro-mechanical element which levitates the rotor magnetically without any mechanical contact between the stator and rotor [1,2].

A bearingless motor integrates the functions of rotation and noncontact levitation and they are employed in high-speed and high-purity areas such as semiconductor, radioactive, space equipment pharmaceutical and medical industry [3-8]. Due to the single-excited, doubly salient structure and presence of significant magnetic force between rotor and stator poles, the switched reluctance motors are ideally suitable as bearingless motors. The non uniform and short air-gap adequately generate torque and radial force to levitate the rotor [9].

# Thyristor Controlled Series Compensator based Optimal Reallocation of Generators for Contingency Management

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## ABSTRACT

Privatization of the power industry has made proper utilization of the available resources a compulsory requirement. Optimal power flow (OPF) is an ideal solution to the problem. At the same time, stable operation of the power systems in both normal and contingency condition is of vital importance. Use of FACTS devices is a good method to stop further contingencies in the power system. In this paper, a combined index based strategy for the optimal placement of Thyristor Controlled Series Compensator (TCSC) and optimal tuning of generators using Krill Herd Algorithm has been proposed for contingency management. The contingency analysis has been done using a new method, namely, rapid contingency ranking technique (RCRT). The TCSC has been placed on the basis of an index which is a combination of Line Utilization Factor (LUF) and Fast Voltage Stability Index (FVSI). A multi objective function has been chosen for tuning the generators. The multi-objective function includes voltage deviation, active power generation cost and transmission line loss. The proposed method has been tested and implemented on an IEEE 30 bus system

**Keywords:** Reallocation, Rapid Contingency Ranking Technique, TCSC, Krill Herd Algorithm, Voltage Stability.

## 1. INTRODUCTION

Due to the increase in the competition in the electrical industry, optimum usage of the available power has become obligatory. Congestion is the problem faced by transmission lines continuously because of carrying power at their extreme transmission limits and sometimes higher. Continuous overloading of the transmission lines can risk the security, reliability and stability of the power systems. Optimal power flow is a method of optimizing an objective function in the presence of operational constraints by the method of

nonlinear programming. Many methods have been developed so far to solve the OPF problem [1]. Meta-heuristic methods are one of the most recent methods used for the OPF problem.

Nanda Kumar and Dhanasekaran proposed optimal power flow method to determine the steady state operation point which minimizes multiple objectives and at the same time improves the system performance [2]. Vijay Kumar demonstrated the effect of TCSC on congestion of transmission lines by optimal power flow method using Genetic algorithm [3]. Rao and Gundavarapu have improvise the security of network under contingency condition with SVC [4]. Further, the impact of BAT and Firefly algorithms to find the best position and size of Static VAR Compensator (SVC) in a power system to improve voltage stability for a multi objective function [5] are compared.

Mangaiyarkarasi and Raja proposed a modified severity index and probability of severity based approach for the placement of Static VAR Compensator in order to improve the voltage stability [6]. Prasad and Mukharjee obtained the solution of optimal power flow of power systems with FACTS devices using Symbiotic Organisms Search (SOS) for a multi objective function [7]. Several authors applied metaheuristic algorithms for obtaining the optimal location of FACTS devices [8 - 9]. Menniti et al. [10] placed SSSC for improvement of available transfer capability using a index which is found to be a very efficient method for the assignment of FACTS devices.

Ya-Chin improved transmission system loading margin (LM) with the installation of SVC to a certain degree and reduced network expansion cost [11]. Nam and Van have increased the locational Marginal Price (LMP) in power market with optimal placement of SVC [12]. Shaheen has used computational intelligence method namely DE has been used to find the optimal location and size of UPFC on the basis of performance index for N-1 contingency condition [13]. Mozzammi et al [14] have stressed on the use of FACTS devices and to prevent blackouts in power systems along with optimal rescheduling. Optimal reallocation of generators is necessary for the optimal utilization of the available power system resources. The advantages of the method can be further improved by the placement of FACTS devices. Series FACTS devices are most suitable for enhancing the transmission capabilities. The FACTS device should

Manuscript received on October 3, 2017 ; revised on February 10, 2018.

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# Geometrical behavior of laminated graphite/epoxy composite using hypermesh

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## Abstract

The laminated composite material is made of ply which are specifically used in automotive, aerospace and military applications due to less in weight and high strength to weight ratio. The role of structural strength is very important in composites, as the material is weak in inherent strength leads to damage of equipment made with the laminated composite. Hence, an accurate understanding of their structural geometrical behavior for residual stresses is required, such as residual stresses with different aspect ratios. In present work, various aspect ratios of laminated composite and its residual stresses are investigated using finite element analysis. The numerical results showed, on the residual stresses, that the effects the change the residual stresses due change of aspect ratio of laminated Graphite/epoxy composite.

**Keywords**— Laminated composite plate, Graphite/Epoxy, Residual stresses, Geometrical behavior, uniformly distributed load, hyper mesh

## 1. Introduction

Laminated Composite material is formed by joining of number of layers made of polymer based materials to get desired mechanical properties like high strength to weight ratio, stiffness, low deflections, stresses etc., The composite material concept is applied to polymer materials, metallic and ceramic matrix materials. In case of composite materials, the fibers are used include boron, glass, silicon carbide, graphite, cellulose, and other matrix materials are alumina, titanium, polyimides, epoxies and aluminium. The aspect ratio is the ratio of length to width of laminated composite plate which in turn develops the geometrical behavior of the composite.

## 2. Literature Review

Moon Chang-Kwon[1] studied the composite laminate materials are an alternative design solution in terms of specific strength and stiffness. For a particular application, designer is provided with required freedom to design interns of the strength and stiffness optimization of a component or structure. R.C. Novak and M.A. DeCrescent [2] The individual layers thermal and mechanical properties in crossed-ply composite made of graphite and epoxy are greatly influences on residual thermal stresses are present in the composite. Analytical method and experimental method of evaluation in different cross-ply composite for residual stresses is done and compared the results for validation. The transverse tensile strength is of the unidirectional composite is considered for investigations on cracks and its occurrences are clearly presented. by consideration of stresses developed. Stango R.J. and Wang S.S [3] presented an advanced fiber-reinforced composite laminates with consideration of in-process stresses are presented. [4,5,6] papers will help to cover extensive knowledge on layered composite plates. An analysis with quasi -three dimensional FE method

is used for the residual thermal stresses of laminate. Using hyper mesh is identified as knowledge gap to estimate the strength of laminated Graphite/Epoxy composite.

## 3. Methodology

Hyper mesh has high strength in modelling of complex problems with accurate results as it consists of leading premier pre-processor. The Hyper mesh helps in not only the complex geometry it can solve the problem with faster. The other capabilities are meshing and the advanced geometry environment. The core competencies are high quality mesh and fast process. As a part of work hyper mesh is used to estimate the residual stresses with below procedure

Step 1: Open window HYPERMESH

Step 2: Material creation

Choose the materials by using menu bar



- Enter the fields enter Graphite-Epoxy
- Enter the values of E1 as 181e3.
- Enter the value of E2 as 10.36e3.

Step 3: property creation

Access the Create property from the menu bar

- Click Close

Step 4: Create a component to hold the model's geometry.





## Linear programming technique based optimal relay coordination in a radial distribution system

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### Abstract

Now-a-days to ensure power continuity and system's reliability the protection system is to be designed properly for distribution systems to handle the faults to avoiding the damage to the equipments and to the service engineers. Different types of relays with different working principles are used to detect different types of faults in the system. In order to avoid mal operation of relays, proper coordination is to be carried out. The objective of this paper is to maintain the relay coordination as well as to decrease the working time of relays by optimizing the values of time dial setting (TDS) using linear programming problem technique (LPP). The inequality constraints guarantee the coordination margin for each primary or backup relay pairs having a fault very close to the primary relay. Simulation is carried out on a IEEE 15 bus balanced radial distribution system with 3 different types of relays namely standard inverse, extremely inverse and very inverse relay and the results are presented and analyzed.

**Keywords:** Inverse Relay; Linear Programming Problem; Optimal Relay Co-Ordination; Time Dial Setting.

### 1. Introduction

Protective system plays a very vital role in a power system, used to detect the abnormalities in the operation and to execute appropriate steps to isolate the faulty part from the healthy region to maintain continuity. A protective system can be considered as a reliable system if only it provides a guarantee of system stabilization as well as continuity of customer's supply. Protection system mainly consists of various types of relays with different working principle to detect different types of faults in the system. In a distribution system, primary relays along with backup relays are used to improve the system protection. Whenever primary relay fails to operate the backup relay comes into operation to maintain reliability so that no instrument is going to be damaged and also system engineers are safe. To achieve this objective, relays have to operate properly and have to coordinate with each other perfectly otherwise protection miscoordination will occur. Broadly relays are classified as static relay, electromagnetic relay and micro-processor based relays. Usage of micro-processor based relays is more frequent due to their fast operations and the design flexibilities. Normally relays having inverse characteristics are used, because these are simple in operation and also reliable. In this paper three different types of inverse relays are considered namely standard inverse relay, extremely inverse relay and very inverse relay. Standard inverse relays operate when the current exceeds its pick up value and the working time depends on magnitude of working current inversely. Extremely inverse relay gives the steepest time current characteristic. These relays are used for protection of machines against overheating. Very inverse relay gives better selectivity as compared to standard inverse relays [1].

Practically it is almost impossible to obtain such a protection strategy given above. On the other hand, the reliability of these networks can be greatly increased if the exact location of fault is determined using modified protection systems or any advance techniques. Several Authors [2-10] applied techniques only to minimize working time while the pickup currents are selected based on experience. To make the coordination process faster, Knable [11] innovated the break points concept, which represent the relays from which the coordination process will done. Several authors [13-14] implement nature inspired algorithms called as genetic algorithm and firefly algorithms to maintain relay coordination.

In this paper, distribution load flow is carried out for IEEE 15 Bus radial system consisting of three different types of relays namely standard inverse relay, extremely inverse relay and very inverse relays. Pre fault voltages at all the buses are determined using load flow analysis. Fault is created at different locations in the system and faults currents are determined. A linear programming problem is formulated with the objective to minimize working time and with primary / backup coordination time interval, TDS and minimum working time of each relay as constraints. Depending on the relay characteristics the coefficients of the objective function is determined. Simulation is carried out and the optimal values of TDS are obtained for different types of relays and the results are presented and described.

### 2. Problem formulation

The coordination of over-current relays is considered as an optimization problem where the sum of working times of all the relays is to be minimized and is given in equation (1).





# Rotor Suspension and Stabilization of Bearingless SRM using Sliding Mode Controller

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## Abstract

Motors working in extreme conditions such as ultra high and low temperatures, high contamination, high purity etc. require high maintenance of mechanical bearings and the regular lubrication. Hence there is a need of a motor without mechanical bearings and lubrication in addition to simple in control and less maintenance. There by, bearingless motors (BLMs) gain more attention. The bearingless switched reluctance motor's (BLSRM) is simple in construction and economical in addition to high speed capacity and high torque to inertia ratio. The magnetic nonlinearity arising due to double salient structure makes rotor eccentric displacement control and speed regulation complicate and needs robust control methodology such as sliding mode control (SMC) which has integrity, high certainty and rapid dynamic response when compared to typical controllers. Sliding mode can be realized with distinct classical reaching laws. This paper presents design and implementation of a SMC for a 12/14 BLSRM and the dynamic performance is endorsed by simulation using Matlab software.

**Keywords:** BLSRM; Suspension Control; Speed Control; Sliding Mode Controller.

## 1. Introduction

The problems arising due to mechanical bearings such as mechanical friction, temperature rise and contaminating lubricating oil can be avoided by using magnetic bearings (MB). The bearingless motor (BLM) is a motor integrated with MB's replacing the mechanical bearings and suspends the rotor in air without any contact [1-2] with the benefits of friction free, wear free, maintenance free and lubricant free operation.

Because of high power density, low maintenance and high efficiency, high performance applications, bearingless switched reluctance motor (BLSRM) is used widely, such as in robotics, aerospace, artificial hearts, and precision machine tools, etc [3-5]. The 12/14 hybrid pole type BLSRM contains two types of poles on stator, the first type is for rotor suspension, and the second is for torque generation. To control the rotor eccentric displacement of the BLSRM in x and y directions error the suspension pole winding currents are to be regulated based on the present position of the rotor. The torque, hence the speed can be controlled by adjusting the torque winding current value [6]. Now a day's novel control methods are very widely used and applied in industrial domain because of rapid development of power electronics and computer controls. The nature of the BLSRM is nonlinear, uncertain and highly affected by parameter variations, makes very difficult to derive the exact mathematical model. The absence of windings and permanent magnetic nature of rotor will give very high speed so it is hard to achieve the fine control utilizing the regular control procedure methodology [7-8].

Sliding Mode Control (SMC) has effectively been implemented to most of the non-linear feedback control systems which are severely affected by parameters changes and disturbance, and also with modeling uncertainties. The approach of the control technique is straightforward with two modes, initially, the system trajectory is driven towards a hyperplane, which represents desired dynamics called reaching mode and later the system trajectory is kept upon that hyperplane known as sliding mode. The technique has advantages such as fast response, negligible effect of unmodeled dynamics and independent of plant parameters and disturbance. The key problem of SMC is that the discontinuous feedback control switches at infinite high frequency from one part of hyperplane to another in the error space in finite time leading to undesired high frequency oscillations of the control called chattering. The most well known ways in the design of corrective control to eliminate the chattering are i) by replacing the discontinuous sign function with the saturation or the sigmoid function ii) insertion of a boundary layer gives better results, but causes finite steady-state error [9-11].

This paper presents the design and implementation of sliding mode controller (SMC) for rotor suspension control and speed tracking of a 12/14 BLSRM. The simulation studies are carried out with Matlab/Simulink software and results are analyzed to show the effectiveness of the controller at different operating conditions such as suspension from rest, accelerating to the desired speed and at variable speed conditions.

The organization of this paper is, at initially, in Section 2, the salient features of BLSRM construction, generation of rotor suspension force and torque, and their control introduced. In Section 3 the design methodology of SMC and in Section 4, the simulation and result analysis presented. The results affirm that







## A survey on existing IP trace back mechanisms and their comparisons

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### Abstract

Security is the one of the main point of focus in recent trends of computer science, as it has to determine the right people accessing the system and ones who are trying the bypassing it. IP spoofing is one of the prevalent attacks, where the attackers launch the attack by spoofing the source address, once this happens they can attack without revealing their exact location. The attacker uses a fraudulent IP address to conceal their identity. To reveal the attackers real locations many IP trace back mechanisms have been proposed but the attacker immediately gets away with the information. There is another problem which is to detect DDoS traffic and the precarious packets set up by the attacker, which are a threat to the victim as well as the whole network, here lies another hurdle which is to differentiate between the attacker's data traffic from the normal data traffic. There are many solutions given for this but one among them is IP trace back which already has researched upon in the past and implemented then, but what is lacking in the solution such that the attacks are even now taking place. IP trace back if modified, strengthened would analyze the traffic faster and trace out the attacker with a faster pace, which is why a hybrid IP tracing and tracking mechanism if introduced could ease the current problem.

**Keywords:** IP Trace Back; DDoS Traffic; IP Spoofing; Hybrid IP Trace Back.

### 1. Introduction

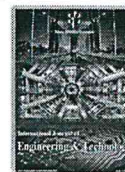
DOS/DDOS attacks comprises of one of the major classes of threats of security relating to the internet today To determine the IP attack sources is the objective of IP trace back, along with this the full path taken by attack packets [6]. Different trace back methods like IP marking, IP logging and IETF ICMP trace back called ITrace have been proposed. In DoS attack generally a large in number of malignant packets are generated and directed towards the victims who are of one or more in number. Here the attacker will try to prevent legitimate user from accessing the services or information. By targeting the network connection of computer and network of the sites what we are trying to use actually, the attacker may prevent from accessing websites, online accounts, email etc., or other services which depends on the computer which is affected. Spoofing usually is the process of replacing the source IP address with a fake IP address and fake page content such that the sensitive data could be stolen by the attacker. The attacker tries to forge the fake IP and content such that when a victim accesses the page his/her data is stolen.

### 2. IP spoofing

In computer science, IP spoofing is a term which is known to everyone in this domain, where there are forged with a fake IP address, impersonating another computer [6]. The major working is when an attacker fakes the address of another computer and uses it to steal the sensitive data of the victim, the attacker intercepts both sides of the connection using various cryptanalytic techniques [2] [6]. The attacker would monitor the traffic and the data sent from A to B and then guess the sequence of packets and data sent. Then the attacker knocks out A and injects his own packets, claiming to have the address of A. In general, IP spoofing also gives the attacker authentication to access the computer or a network in an unauthorized manner by making it look like, a malicious message has come from a trusted machine by "spoofing" the IP address of that machine and to ensure the intrusion, the intruder must first determine the IP address of a trusted system, and then modify the packet headers to that it appears that the packets are coming from the trusted system [2].







# Rotor autocentering and speed control of hybrid bearingless SRM using single-neuron adaptive PID controller

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## Abstract

The bearingless switched reluctance motor (BLSRM) is emerging as an attractive option for modern industrial applications because of the features, such as compact size, lubrication and seal free performance, long life and ability to rotate at very high speed and high power. The control approach is extremely fundamental to a steady operation because of its highly nonlinear, multi variable and open loop unstable nature. This paper presents a single neuron based rotor suspension control of a 12/14 Hybrid Pole BLSRM with autonomous rotation and suspension poles. This hybrid pole structure produces the suspension force linearly with respect to rotor position and independent of the torque characteristics. Implementation of a non model based Single neuron adaptive PID Controller by avoiding the modeling complexity is proposed. Experimental results demonstrate that the proposed controller maintains the rotor in the center position as well as the speed tracking and disturbance elimination performances independently.

**Keywords:** BLSRM; Eccentric Control; Suspension Control; Single-Neuron; PID Controller.

## 1. Introduction

High-speed motors are required in modern industrial applications such as turbo molecular pumps, centrifugal pumps, compressors and so on [1-3]. The traditional mechanical bearing which is in contact and bears the shaft of the high speed motor creates many problems such as mechanical wearing, thermal problem, increasing of frictional drag, and decrease in service life of bearings. Moreover the use of lubricants, and seals makes the motor not suitable for high purity environments such as space, semiconductor, pharmaceutical, and radioactive [4-5]. To overcome the limitations of the conventional bearing motors, magnetic-bearing motors (or bearingless motors) which combines torque driving and self-levitation, have been designed [6-7].

A bearingless motor is a motor integrated with magnetic bearing, with many benefits, such as compact size, lubrication and seal free performance, long life, low cost and assists the motor to rotate at very high speed and high power [8-9]. The switched reluctance motors are a natural choice as bearingless motors because of the magnetic attraction between the stator and rotor poles produces the torque to drive the rotor. In addition the rotor experiences a high amount of radial force which can be used effectively for suspension the rotor shaft.

The flux distribution in the air gap is irregular due to excitation of the suspension winding and the regulation of rotor eccentricity is achieved by suspension force. The magnetic suspension force and torque can be created in a same unit and their control is carried out with less number of power electronic converters, controllers, and connection wires when contrasted with a motor having magnetic bearings

The majority of the proposed bearingless switched reluctance motor (BLSRM) structures are based on conventional SRM struc-

ture, which complicates the rotor eccentricity control due to the existence of coupling between the suspension force control and the torque control. M. Takemoto et.al proposed differentially wound BLSRM in which auxiliary suspension windings and torque windings are wound on stator poles and are controlled by different power converters [10-11]. In the hybrid rotor structure proposed by Morrison et.al the rotor is made up of two laminated segments, circular segment used for suspension and multipole segment used for both suspension and torque generation [12]. In all the aforesaid designs, as the control of torque is coupled with suspension force they cannot guarantee the full utilization of generating torque and radial force regions and selection of operating point is a compromise between the two forces. Wang, H et.al proposed a hybrid BLSRM by separating suspension force pole with torque pole to minimize the inter-dependency of two forces. Due to this decoupling poles, the suspension force control can be achieved easily [13].

The Suspension control of the hybrid BLSRM rotor is quite a challenging problem due to its inherently high nonlinearity and uncertainty. Zhenyao Xu et.al proposed one PI controller for the speed tracking and two independent PID Controllers for controlling the rotor displacement in x and y directions. The tuning of the PID controller parameters is a time consuming process and poor tuning results rotor eccentricity, torque pulsations and hence speed ripples due to high nonlinear variation of each phase inductance [14].

The design of suitable control system for the rotor autocentering of BLSRM in view of decoupling is critical for true operation of a BLSRM. The parameters of conventional PID controllers used to control the rotor autocentering, have the fixed values when the motor operating in a specific state. Whenever the motor parameters or state changes, the performance will be influenced, and the dynamic and steady state accuracy cannot be guaranteed. Similar-





# A Novel Feature Selection based Classification Model for Disease Severity Prediction on Alzheimer's Database

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**Abstract---** In the current era, research on automatic image classification on high dimensional medical disease databases is growing rapidly. Since most of the Alzheimer's disease databases have heterogeneous features with different levels of severity patterns. Detection and classification of high risk patterns has many potential benefits for decision making. Traditional image classification models such as Naïve Bayesian, Neural Networks, SVM, Regression models, etc are used to classify the image using the annotated ROI and image texture features. As the size of the Alzheimer's disease patterns and its categories are increasing, traditional data classification models are failed to process the disease patterns due to class imbalance, inconsistent, and sparsity issues, which may affect the disease prediction rate and error rate. Unlike the existing solutions, which require a prior knowledge of classification parameters for various types of image features, which is not possible to obtain in practice. Also, as the size of the training images increases, it becomes difficult to find the relevant features using the image features and ROI values. In this proposed model, a novel filtered based automatic Alzheimer's disease classification model is proposed to improve the disease prediction rate and to minimize the error rate of the classification model. Experimental results show that the proposed model has high prediction rate compared to the traditional models in terms of true positive rate and error rate are concerned.

## I. Introduction

Abnormal behavior and loss of memory could indicate a brain disorder that is neurodegenerative, known as Alzheimer's disease. In other words, Older people suffer from some form of dementia which could lead to neuronal loss known as Alzheimer's disease (AD). Neuropsychological examination and psychometric assessment mainly determine the clinical evaluation. The confusing factor of cognitive research may, however, hide the early signs of Alzheimer's disease. Successful diagnosis of the disease can be achieved through using structural MRI to detect the brain's anatomical changes that are brought about by the disease. The advantage of using automation for AD detection lies in the improved accuracy and the increased speed of the process of treatment. Structural neuroimaging can provide good markers for the detection of diseases such as AD because of their sensitivity to degeneration. AD detectors fall into three typical types. The types which base on cortical thickness are the most used ones. Querbes and colleagues produced an 85% accuracy of distinction of normal aging healthy controls from patients with Alzheimer's disease. The second class of popular structural measurements is those who consider the volumes of certain structures, for example, the hippocampus. An example of a technique which reduces dimensions efficiently is Principal component analysis. It removes the repetitive elements from the data and does not alter a large part of the useful information, hence resulting in data compression. The technique converts the original feature data to an ordered, and uncorrelated variable set called the Principal Components (PCs) so that the first few PCs contain most of the original variables' variations. PCA can greatly reduce the brain image data's dimension. Support vector machine has, however, produced better results in the categorization of clinical diseases. It is a supervised learning model that allows high dimensional data to be trained and classified [1][2]. Some studies prove the SVM's high accuracy of AD classification using high-dimensional data set.

Machine learning models are used to classify different medical datasets such as microarray data, clinical data, and proteomic data as input. Most of the traditional approaches consider the features as independent and linear. Most of the biological systems are non-linear and its parameters are interdependent, thus machine learning has become better choice. Both machine learning and conventional methods suffer from high dimensionality problem. This problem can be resolved by either decreasing the number of variables or increasing the number of training



# Document details - Text mining with hadoop: Document clustering with TF\_IDF and measuring distance using euclidean

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Volume 10, Issue 14 Special Issue, 2018, Pages 1784-1792

## Text mining with hadoop: Document clustering with TF\_IDF and measuring distance using euclidean(Article)

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### Abstract

Considering huge amount of data in the existing globe, lot of various Data Mining algorithms have become more essential for computations which increases the use of applicational areas desperately. Furthermore, the dimensional space of the data in different fields often creates a problem in machine learning algorithms. With the Dimensional increase in data have a negative impact on supervised and unsupervised techniques. In this paper, the features are examined efficiently. The main goal is to achieve the term weight in the document by measuring its similarity based on TF-IDF with all positive values without any negative values and Euclidean Distance, also giving continuation for NMF method and K-means clustering. © 2018, Institute of Advanced Scientific Research, Inc.. All rights reserved.

### Author keywords

[Clustering of documents](#) [K-Means clustering](#) [Non negative matrix factorization](#) [Performance](#) [Text mining](#)

### Funding details

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### Funding text

This work is financially supported by the Department of Science and Technology(DST), Science and Engineering Research Board(SERB) under the scheme of ECR. We thank DST\_SERB for the financial support to carry the research work.

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CLUSTERING AND INDEXING OF MULTIPLE DOCUMENTS USING FEATURE EXTRACTION THROUGH APACHE HADOOP ON BIG DATA

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Laxmi Lydia, E. , Sharmili, N. , Nguyen, P.T.

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ISSN: 1943023X  
Source Type: Journal  
Original language: English

Document Type: Article  
Publisher: Institute of Advanced Scientific Research, Inc.



## Vibration Analysis and Control of Locomotive System

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Received (28 September 2017)

Revised (4 October 2017)

Accepted (8 November 2017)

Vibration is an undesirable phenomenon of ground vehicles like locomotives and vibration control of vehicle suspension system is an active subject of research. The main aim of the present work is to modeling and analysis of locomotive system. The simplified equations for dynamical locomotive are firstly established. Then the dynamical nature of the locomotive without control is investigated, and also active control suspension and passive control suspension are compare and discussed. The obtained simulation shows that suspension of the locomotive with feedback control could decrease the locomotive vibration. According to the above control strategy along with angular acceleration it also reduces the possibility of vibration of the locomotive body, to improves the stability of vehicle operation.

**Keywords:** locomotive, suspension, feedback and control.

### 1. Introduction

The payload capacity of a locomotive has not its own, and the main aim is to move the train along the tracks. some trains itself have self-propelled payload-carrying vehicles. Normally these are not considered as locomotives, and referred as railcars, motor coaches or multiple units. vertical accelerations are generated by the variations in road surface, these can be isolated in vehicle body by Vehicle suspension system. It provides passengers inside the vehicle can feel ride is more comfortable. Paolucci et al. [1] explained the ground vibrations produced by a passenger train at Ledsgaard test site, Sweden and simulated numerically through a spectral element discretization of the soil. Triepaischajonsaka et al. [2] introduced a hybrid modeling

# Document Clustering Based On Text Mining K-Means Algorithm Using Euclidean Distance Similarity

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**Abstract-** Data mining a specific area named text mining is used to classify the huge semi structured data needs proper clustering. Maximum text documents involves fast retrieval of information, arrangement of documents, exploring of information from the documents .Declaration of text input data and classification of the documents is a complex process. The main objective of this paper is to produce a specific open source to class the clusters of identical documents in the interrelated folders and to lower the complexity of locating each document. Algorithms considered are challenges for open research responsibilities. This paper describes the document clustering process based on the clustering techniques, partitioning clustering using K-means and also calculates the centroid similarity and cluster similarity.

**Keywords :** Document Clustering, TF-IDF, Clustering techniques, K-means

## Introduction

A lot of text document sources are suitable for manipulating computerized computations. Text mining deals with unorganized , semi-structured datasets. Techniques involved in text mining initiates with the selection of text documents.

The pre-processing approaches unclutters and formats the input data, also accordingly the extraction of useful feature information from the documents is done. Later the techniques in text mining such as clustering, classification algorithms are designed to position the documents. Various classification approaches for the process of discover a set of models or functions that illustrate and categorize data classes or consideration for the objective of visualizing the class objects whose class label is not specified and clustering techniques figure out data objects without examine the known class model. Following figure1 describes the different techniques that involve in clustering. Among all clustering techniques K-means provides the best efficiency.



# Fuzzy Logic Based Technique for Propeller Noise in Mechanical Structures

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## Abstract

The determination of the propeller of submarines is of great importance particularly when the measurable parameters are not within the reach using the membership function concepts. The paper has a solution of certain conditions which are of practical resolve.

**Keywords:** Fuzzy logic, blades, propellers, submarines, noise.

## 1. Introduction

There are many areas in which propeller noise is a serious problem in submarine applications concern. The commercial usage of propeller driven aircraft is limited by due to acceptable limits of cabin noise. Ship propellers are a major cause of both shipboard noise, and radiation tactical operations. Submarines need quiet propellers to be stealthy in tactical operation. Submarines rotors have many of the same characteristics as propellers. In all these examples the dominant processes depend on the application [1]. This paper has given a fuzzy logic based solution for determining noise parameters under uncertain conditions. Rotating blades emit two distinctly different types of acoustic signature. The first is referred to as tone or harmonic noise, and is caused by sources that repeat themselves the second is broadband noise which is a random, non-periodic, signal due to turbulent flow over the blades.

## 2. Literature Review Fuzzy System

An object of the present innovation is to provide a practical control for coordinating pitch engagement and selection between a motor and a brake for controlling blade pitch in a turbo fan engine [2]. According to the present rotation a major parameter of engine command and condition signals are fuzzified into a corresponding first parameter of engine command. Fuzzy set signals are operated upon by a set of fuzzy rules in order to provide request fuzzy set signal, which is then defuzzified to provide a crisp. Either the fuzzy position lock disable request signal or the defuzzified, crisp position lock disable request signal is provided, along with a second profusion of engine condition signals, for fuzzification which is observed in figure 2 and 3 into a second corresponding

profusion of engine condition fuzzy set signals[3]. A second profusion of fuzzy rules are applied to the second profusion of engine condition fuzzy set signals and a position lock disable fuzzy set signal is provided after application of the rules. This signal is defuzzified, and a crisp position lock disable signal is provided in figure 4. Finally, a third profusion of engine condition signals are fuzzified to provide a corresponding third profusion of engine condition fuzzy set signals which are operated on by a third profusion of fuzzy rules for providing a device fuzzy set signal in figure 5.

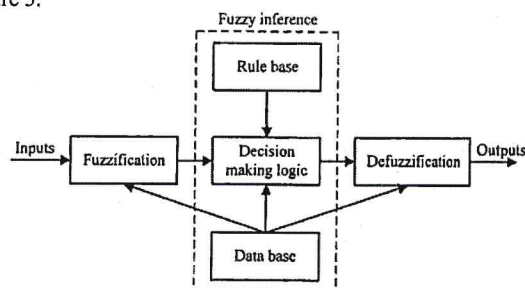


Fig. 1: Represents the block diagram of fuzzy logic

The device fuzzy set signal may be defuzzified directly to provide a crisp device signal subjected to a process that first provides a fuzzy set that is operated on by a specific rule set in order to provide a device output fuzzy set signal that may then be defuzzified to provide another crisp device signal that has been protected against noise [4]. The present invention provides a heuristic and elegant solution to what would otherwise be an extremely complicated task which would be extremely difficult to carry out using classical logical techniques. A block diagram of the fuzzy logic shown in figure 1 [5] [6].





# Analyzing the performance of DSR protocol on MANET's network models with various scenarios using ViSim

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## Abstract

The examination of the effect of MANETs in various applications with the usage of various protocols was important to study the performance of these networks. The DSR protocol was one of the most important protocols in MANETs protocols. Hence, this protocol implementation in these sorts of networks with various numbers of nodes was important. A study has been conducted to study the performance of these networks with various numbers of nodes in the network. The behavior of the network was analyzed with various set of nodes. The analyzing of these networks was done with the help of the ViSim simulator. The number of nodes considered for analyzing the performance of the network was three, ten and twenty nodes. An investigation of the conventions has finished the considered parameters that measure the QoS measurement like end-to-end delay, throughput, jitter, outturn and elective system execution measurements. The considered cases were implemented on three different cases and results were discussed in detail. The results show that the performance of the current considered protocol was excellent in the above considered three scenarios.

**Keywords:** DSR, VISIM, Quality of Service (QoS) Metrics, Throughput, Routing Bytes, Routing Load and Jitter.

## 1. Introduction

In Mobile Ad-hoc Networks, execution is processed to study the factors like quality, quantifiability and movement of the nodes in the network etc [1], [3]. Here are the default parameters of DSR steering convention in MANET's for finding the effect in QoS Metrics that zone unit was partaking in a crucial part inside the execution of framework less network [4]. Furthermore, conjointly finding the execution varied designs in steering conventions of MANETs in conjunction with differed default parameters come about QoS parameters like throughput, delay and so on. In this paper, the most commitment is to research the execution of responsive directing convention in specially appointed systems underneath entirely different consequences with parameters by Vi-Sim machine [6]. With the kelp of the ViSim machine, the QoS parameters and breaking down the execution of DSR responsive directing convention are changed [7-8]. Portable Ad hoc systems are the remote systems that were used to a great extent of utilization in the current circumstances inside the ongoing scene applications [3-4]. The related systems are the self-designing systems, which can revision the places of the systems and their areas bolstered the necessities of the system and their execution. The cell phones are permitted unreservedly to move tumultuously and combine themselves subjectively [6-8].

## 2. Routing protocol problems in MANETs

In the current section, several problems to be encountered while working with MANETs in the various scenarios of various numbers of nodes for various routing protocols are discussed.

- i) Wireless Links: The preeminent fundamental reason to be pondered at the points is tending to utilize a remote system, especially every one of the hubs inside the gadget organise are working beneath the remote mode. In light, the hubs are associated inside the method of a remote mode, every node of the hubs amid a remote system which was prepared just to be assaulted by various aggressors inside the system. Wired systems cannot get the opportunity to be directed or to be issued because the hubs needn't bother with the physical connection to get to the data from the hubs and subsequently the assaults on the hubs inside the system. Thus, to abuse the remote systems, the data measure should be got the opportunity to be least.
- ii) Dynamic Topology: The hubs inside the portable Adhoc systems are dynamic inside the network as far as the topology and their working is considered. The topology of the system and the hubs that have associated inside the system may change now and again. In light of the hubs inside the remote system changes every once in a while, the topology of the system changes and the amount of the heap on the system and conduct of the hubs inside the system in this manner, the execution of the system likewise changes as after effects of the results those occurred. As a result of the

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## Constrained consensus in hybrid state estimation in wide area monitoring(Article)

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### Abstract

The common feature of many monitoring and control applications that will be accommodated in the future Wide Area Monitoring and Control system will be the quasi real time execution, exploiting the fast reporting rate of the Phasor Measurement Unit (PMU). A critical parameter for the timely execution and robust performance of such real time applications is the ability of the algorithm to estimate the states even in the case of missing of the PMU measurements. The dropouts of the data mainly due to the communication infrastructure and traditional meters, should be quantified and considered to reach a consensus in the process of a real time application. State estimator is crucial for on-line power system monitoring, analysis and control. With the increasing use of synchronized phasor measurement units (PMU) in power grids, how to utilize phasor measurements to improve the precision of state estimator becomes imperative. Since there are lots of traditional measurements in SCADA system and it is hard for phasor measurements to replace them in the near future, the best way is to develop hybrid state estimator which includes both phasor and traditional measurements to get better behavior. In this paper, a novel state estimator for including voltage phasors, branch current phasors and traditional measurements that has a capacity to tackle missing data phenomenon is evaluated. © 2018, Institute of Advanced Scientific Research, Inc.. All rights reserved.

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ISSN: 1943023X  
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International Journal of Vehicle Performance

Volume 4, Issue 2, 2018, Pages 186-199

## Parameters optimisation of vehicle suspension system for better ride comfort(Article)

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### Abstract

The performance of a vehicle suspension system affects ride comfort and stability of the vehicle which are the two conflicting requirements. A passive vehicle suspension uses a spring and viscous damper to control the performance. In this paper, an efficient method is proposed for determining optimal stiffness and damping coefficient of a vehicle suspension system. A two degree-of-freedom quarter car vehicle model using linear quadratic regulator (LQR) control is established and the response of the model is obtained. The vehicle is considered to travel on the random road with constant velocity and the road roughness profile is modelled as the output of first-order linear filter under white noise excitation. The optimal parameters are obtained for the vehicle by correlating the performance of passive suspension with the fully active suspension using LQR. Results show that the performance of passive suspension using optimal parameters is very close to that of active suspension. © 2018 Inderscience Enterprises Ltd.

### Author keywords

Linear quadratic control LQR Optimization Passive suspension Quarter car model Ride comfort  
Vehicle performance

### indexed keywords

#### Engineering controlled terms:

Active suspension systems Degrees of freedom (mechanics) Linear control systems  
Model automobiles Optimization Roads and streets Suspensions (components)  
Vehicle performance White noise

#### Engineering uncontrolled terms

Linear quadratic control Linear quadratic regulator control Passive suspension  
Quarter car model Ride comforts Stiffness and damping coefficients  
Vehicle suspension systems White noise excitation

#### Engineering main heading:

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## Four Quadrant Control of Rotor Displacements of Bearingless Switched Reluctance Motor under Eccentric Fault Conditions

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### Abstract

The objective of this study is to align the rotor position at the center and maintain less eccentric rotor displacements when bearingless switched reluctance motor (BSRM) is subjected to different loads. In this paper a PID controller is proposed which maintains a stable magnetically levitated rotor position and displacements even on the application of sudden loads to the rotor shaft. As a first step, the rotor is displaced in the four quadrants in the air gap and is successfully pulled back to the center position with the help of the proposed suspension PID controller along with asymmetric converter, hysteresis controller, and rotor displacement sensors. The second step is to run the motor at rated speed by sending phase currents through the PI controller along with a phase hysteresis controller. The third step is the sudden application of torque and suspension loads to the rotor owing to which, the rotor is subjected to eccentric displacements. However, due to control action in suspension phase current, it is pulled back quickly to the center position. The change of suspension loads has a negligible impact on the torque winding current, net torque, speed of the motor, hence the decoupling control is possible between torque and suspension force control. Simulation studies are conducted in all the cases and the obtained results clearly indicate that the suspension winding forces, suspension currents and rotor displacements in both X and Y-directions are in stable condition.

**Key Words:** Asymmetric Converter, Bearing Less, Decoupling Nature, Displacement, Hysteresis Controller, Magnetic Suspension

### 1. Introduction

The present modern industry needs high-speed motor drives in aerospace, compressor, flywheel technology based electrical energy storage and electric vehicles etc. But several difficulties may occur when conventional mechanical bearing used to support the shaft of the high-speed electric motor. The mechanical bearings in high-speed applications increase frictional drag and decrease the performance of the machine. It causes, decrease the service life of bearings due to heavy wear in bearings and

also increases the problem of maintenance for the machine. With the aim to resolve the difficulties caused by the conventional mechanical bearing, a magnetic bearing motor was widely researched. Due to the limitations of a magnetic bearing motor, the bearingless motor has got more attention [1,2]. Compared with the magnetic bearing motor, the bearingless motor has benefits such as maintenance-free, compactness, clean, low cost, etc. The rotor of the bearing less SRM is not supported by mechanical bearings, so its center position will have eccentricity effects due to sudden suspension loads, torque loads, and faults from load end [3,4].

The different structures of BSRM have been proposed

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Volume 10, Issue 2, 2018, Pages 195-207

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## Graphical modelling framework(Gmf) of map-reduce programming(Article)

Laxmi Lydia, E., Amaranatha Reddy, P.

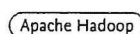
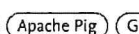
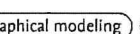

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### Abstract

With the rise of Big Data generation, the information is flowing from various resources. According to desk of Eric Schmidt- "There were 5 exabytes of information created by the entire world between the dawn of civilization and 2003. Now that same amount is created every two days." Hence, Storage of data, its processing and its analysis are becoming tougher with the traditional approaches of data processing. Existing system: This processing of large datasets is done using Map Reduce Programming model by Apache Hadoop, an open source framework. But this requires the in-depth knowledge of map and reduces functions for the normal users to solve the real world problems. Proposed system: In this paper, we advocate the usage of graphical model-driven approach by means of the models (Drag & Drop model) and their automated manipulation. Hence the ordinary users can create the map reduce applications easily. © 2018, Institute of Advanced Scientific Research, Inc. All rights reserved.

### Author keywords

 Apache Hadoop  Apache Pig  Graphical modelling  Hive

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# Performance Inspection of Apache Spark and Map reduce Analyzing Through K-Means

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**Abstract**-Big Data is an important term for the unique systems and advances predicted to collect, construct, process and congregate experiences from vast datasets. Although the point of functioning with information that outperform the registering force or quantity of a solitary PC isn't new, the certainty, scale, and evaluation of this kind of calculation has extremely enhanced as of late. It has for a long while been the subject of excitement for computer science fans the world over, furthermore, has expanded substantially more obviousness in the later times with the steady impact of data occurring due to any similarity of web based systems administration and the travel for tech creatures to become acquainted with more significant examination of their data. MapReduce and its varieties have been exceptionally productive in realizing tremendous scale data focused applications on product gatherings. On the other hand, a substantial bit of these systems are fabricated around a non-cyclic data stream exhibit that isn't appropriate for different well known applications. Interesting MapReduce executes employments' in a clear yet rigid structure plan. MapReduce changes step ("Map"), synchronization step ("rearrange"), and a phase to join comes about because of each of the hubs in a group ("Reduce"). In like manner to vanquish the unbendable outline of Map and Reduce here the proposal starts with late exhibited Apache Spark, where each of the projects a taking care of model to separate huge data. The essential part for "successor to MapReduce" now-a-days is Apache Spark. Alike MapReduce, it is an accommodating motor, in any case it is proposed to run different workloads, and to do in that limit significantly faster compared to that more arranged structure. This paper mainly works on the differentiation of two frameworks and the paper also focuses on execution examination through standard tools which would be consider as learning figuring for packing (K-Means), through thinking of some as various parameters such as booking delay, accelerate vitality utilization than the current framework.

**Keywords:** Apache Spark, MapReduce, Apache Spark, K-Means

## Introduction

Big Data and Analytics are coiled, cross-examined that isn't new. Many scientific strategies, for example, regression, experiments, distraction, and machine learning, have been available for a lengthy time. Certainly, even the enticement in supervise unstructured information, example, email and reports has been certainly knew. What is new is the gathering up of approaches in PC modernized and programming, Advanced origin of information (e.g., online networking), and business contingency. This combination has made the current complication and openings in large information exploration. It is not opposing to provoke another dimension of training and learning called "information science" that combines the designs, equipment, prior and methods for searching in qualitative tremendous information.

The consistent and astonishing advancement of PC equipment innovation over the most recent couple of years has prompted vast supplies of intense and reasonable PCs, information accumulation supplies, and capacity media. Because of this advance there is a awesome consolation and inspiration to the database and data industry to make countless and data storehouses, which is accessible for exchange administration, data recovery, and information examination. Along these lines, innovation progression has given a colossal development in the volume of the

## Sensor Less Control of Position and Displacements of Bearing Less Switched Reluctance Motor by using Sliding Mode Observer

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**Abstract:** In this study, a novel indirect sensorless sliding mode observer based displacement and position sensing techniques are proposed for Bearing less Switched Reluctance Motor (BSRM) to avoid the limitations of the mechanical sensors and to get the fast dynamic response for high-speed operations. To get fast convergence and more robustness against parameter variations in view of both mechanical and electrical disturbances, the sliding mode observer design is very appropriate for the BSRM. The conventional on-off hysteresis current controller and asymmetric converters are used for the estimation of position and displacements. Under different initial states, variations of drive parameters and suspension load disturbance conditions the performance of proposed SMO for BSRM was simulated to verify the robustness. At the instant of change of load there is a temporary increment of errors of position and rotor displacements of proposed SMO for BSRM. The whole system reached its expected precision tracking. The fast convergence rate and more robustness and disturbance rejection capability properties are carefully studied. The observer can provide stable and accurate position estimation and displacement estimation and speed estimation even there is an unexpected variations in reference and suspension loading conditions.

**Key words:** Asymmetric converter, hysteresis controller, rotor displacement, sliding mode observer, BSRM, appropriate

### INTRODUCTION

For high-speed applications, the magnetic bearings are integrated into motor's structure to avoid the lubrication and friction between the rotor shafts and bearings is called as bearing less technology. The BSRM realizes both levitation and rotation at the same instant by integrating the magnetic suspension winding into the stator of the motor. A bearing less SRM drive generally needs a rotor displacement sensor and position sensors to control speed, torque and rotor displacements which will add complexity to drive, increases the cost and size of the whole drive system (Zhan *et al.*, 1999; McCann *et al.*, 2001). And also, causes some practical limitations to get accurate rotor angle measurement and radial displacement measurement values to improve the performance for industrial applications (Islam *et al.*, 2003; Davijani *et al.*, 2016). Thus, for the purpose of eliminating this physical position sensors and displacement sensors, many indirect position and displacement identifying techniques have been proposed for BSRM drives in current years.

There are two major indirect position methods for Switched Reluctance type Motor (SRM) drives to eliminate physical position sensor. One of them is based on waveform detection method. This method is based on the measurement of inductance deviations in one of the un-energized phases. Another significant method is established from the information that the terminal voltage and currents of an SRM drive. The both phase voltages and currents holds the essential information to re-form the rotor position and its displacement from the center. To overcome the above said problems and estimation of both position sensing and displacement sensing separately an indirect sensor less Sliding Mode Observer (SMO) is designed based on phase voltages and currents. While designing of sliding mode observer, the magnetic saturation, load disturbances, parameter variations (both mechanically and electrically) are considered.

In this study, the speed, position control and displacement control of Bearing less Switched Reluctance Motor (BSRM) with 12 salient poles on the stator and 14 salient poles on the rotor by using sensorless sliding



# Kantowski-Sachs modified holographic Ricci dark energy model in Saez-Ballester theory of gravitation

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**Abstract:** We have considered Kantowski-Sachs space-time in the presence of matter and anisotropic modified holographic Ricci dark energy components in the scalar tensor theory of gravitation formulated by Saez and Ballester (Phys. Lett. A 113; 467, 1986) and derived the field equations of the theory. We have used (i) Hybrid expansion law proposed by Akarsu et al. (JCAP, 022, 2014), (ii) a relation between metric potentials and (iii) modified holographic Ricci dark energy density given by Chen and Jing (Phys. Lett. B 679, 144, 2009) to obtain an exact solution of the field equations which describes a Kantowski-Sachs holographic modified Ricci dark energy universe in this theory. Physical and Kinematical parameters are also computed and their physical behavior is discussed.

**Keywords:** Kantowski-Sachs model, Ricci dark energy, Saez Ballester theory.

## 1. Introduction

The observations from distant type Ia supernovae confirm that the universe at present, is in an accelerated phase of expansion [1]-[3]. The accelerated expansion can be attributed to an exotic form of energy, known as dark energy. It provides a negative pressure that gives an antigravity effect driving the acceleration. However, the exact nature of dark energy still remains as a mystery [4]. Cosmological constant in the classical FRW model can be a simple candidate for dark energy. But this has fine tuning problem and coincidence problem. Some other candidates proposed to construct dark energy models are quintessence models [5], phantom models [6], K-essence [7] and so on.

There are two major approaches to address this problem of cosmic acceleration either by introducing a dark energy component in the universe and study its dynamics or modifying

## Simulated Studies on the Performance of Intelligent Transportation System Using Vehicular Networks

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### Abstract

In this paper we tend to propose the instrument for recognizing fast vehicle in transport unintended Network (VANET). Keeping in mind the tip goal to understand the surrounding condition, each vehicle often communicates its position, temporal order knowledge in its correspondence run. At the purpose once a vehicle enters the territory of a Road aspect Unit (RSU), the RSU gets the position and temporal order knowledge of the vehicle and send it to the Central Server. The Central Server registers the traditional speed, blockage and street mischances of the vehicle utilizing time and position knowledge gotten from the RSUs. At the purpose once a vehicle is found to own a lot of speed or Road mishap had happened than the specific space, the Central Server communicates this knowledge to any or all RSUs in its vary. At the purpose once the vehicle once more comes into the scope of a RSU, it illuminates the vehicle to drive within as way as doable or to require redirection utilizing a notice message. Keeping in mind the tip goal to assess the execution of our set up, we've got utilised Veins 0.5 breed check system that chips away at OMNeT++ as a system check system, Simulation of Urban movableness (SUMO) as traffic check system.

**Keywords:** VANETs, OBU, RSU, WAVE, ITS, MANETs

### 1. Introduction

Traffic blockage on streets is a prime issue in city communities. The clog and car collecting trouble is joined through steady chance mischances. Absence of avenue traffic safety and increment in the number of speedy automobile takes a no of valuable human lives and represents a proper risk to our condition additionally. One-of-a-kind consequences are recognized with natural infection and energy squander. As indicated through countrywide dual carriageway Traffic safety administration (1,2), 6.3 million Police discovered traffic mishaps, and forty three people were slaughtered. The financial system ejects induced due to these mischance had been greater than \$230 billion and millions of individuals were harmed. Preparatory protection measures like airbags and safety belts are applied yet they cannot wipe out troubles because of motive force's powerlessness to foresee the circumstance early(4). On an interstate or in a defining moment a vehicle cannot foresee the prevailing pace of various cars.

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Received (September 19, 2017), Review Result (January 10, 2018), Accepted (January 17, 2018)  
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## Design, Analysis and Parametric Study of Rectangular Dielectric Resonator Antenna Arrays

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### Abstract

A Rectangular array dielectric resonator antennas are applicable for microwave range of frequencies and the proposed antennas are built with a dielectric constant  $\epsilon_r$  of 10.2, the Rectangular array DRAs are excited by a Coaxial Probe feed line mechanism. These antennas are suited for mobile broadband applications like 4G, 5G services. The modeled antenna is placed on a ground plane with a size of  $116 \times 116 \times 0.0029 \text{ mm}^3$ . The antenna parametric results were intent through CST Microwave Studio Suite 2017 and around the frequency of 10 GHz, a High gain of 10 dB result given by these proposed Array DRAs are better than the existed conference proceeding titled as high permittivity design of rectangular dielectric resonator antenna for C band applications.

**Keywords:** Dielectric resonator antennas (DRAs), Probe feed and CST Studio Suite

### 1. Introduction

The technology grows from the 1st generation, such as 1G to 2G, 3G, 4G and so on up to 5G. Each and every of the generations of the technology has several variations and innovations. The fifth generation (5G) technology is anticipated to finish the fourth generation technology and provides solutions to the shortage arising from 4G[1] like restricted information measure and speed, As 5G is developed and implemented there'll be a significant demand particularly on the user instrumentality and base station infrastructures [1]. Almost all mobile communication systems use current cellular spectrum in the range of 300 MHz gigahertz. Hence, this spectrum (below 3 GHz band) has been overcrowded. That is why modern communication system has been shifting upward to the mm wave band. In 5G requirements, the antenna should at least have a gain of 12 dBi and bandwidth more than 1 GHz [2]. There are several researchers done on wireless antenna for millimeter wave band[3-6].

Due to their attractive features and immense characteristic applications, DRAs are largely using in present day wireless communications. These are having dielectric constant ranging from 10 to 100 for high frequency applications. In 1939 Ritchmyer showed that dielectric objects in the form of toroids could function as microwave resonators, if the shapes, permittivities and feed mechanisms are appropriately chosen. Many years later in 1983, McAllister *et al.* showed that a cylindrical dielectric slab placed atop a ground plane, and excited by a probe fed through the ground plane into the dielectric, will radiate in a direction normal to the ground plane when the excitation frequency is at or near the resonant frequency of the dielectric slab. Soon thereafter the investigation extended to orthorhombic resonators. Dielectric resonator antenna (DRA) [6-7] has been of interest due to their low loss, high permittivity, light weight and ease of

Received (October 15, 2017), Review Result (December 19, 2017), Accepted (January 26, 2018)

# A Versatile and Cost Effective Multimodal Wheelchair

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## Abstract

The aim of this endeavor is to design a wheelchair to suit to the needs of such persons .By incorporating temperature and humidity sensor, IR sensor, FSR sensor and voice recognition sensor/module ,the device is quite versatile in attending to the basic problems encountered .After testing ,it was found that this apparatus helps in avoiding obstacles. If allows the person to use his tongue of required. The additional benefit is to have voice recognition for movement .Cost effectiveness is yet another merit of the proposed system.

**Keywords:** FSR sensor; Arduino; Voice recognition sensor; IR sensor; Wheel chair.

## 1. Introduction

An intelligent wheel chair comprising of sensors such as temperature and humidity [1]. IR sensors [2], FSR sensor [3], voice recognition sensor [4] and microcontroller [5] along with arduino board [5]. It can be used by physically challenged or elder person to move inside the home effort less without any help of others. Often the elders forget the location of different rooms and physically challenge an counter difficulty moving the wheel chair themselves .By using temperature and humidity sensor working can be given to avoid extreme temperature points as in the kitchen .The IR sensor helps in locating obstacles stopping the wheel chair .FRS helps the paralyzed people who can move only tongue; Different pressures stripes placed in the mouth help in movement of chair depending on the applied pressure .The voice recognition module facilities movement into different rooms ,by moving the person pronounce a suitable word predefine in the system. All these sensing modules are currently controlled by a switching mechanism so that the user can have an automatic chose [6] .This wheel chair is not only cost effective but less wait, high durability power saving advantage [7].

### Conditions of Movement

The proposed wheel chair has five conditions modes of operations.

1. Moving forward to the front of user
2. Moving backward to the rear
3. Moving turning to the right
4. Moving turning to the left
5. Static halt condition

## 2. Principle of Operation

The temperature and humidity module provide an input to AT89S55 microcontroller circuit kit. So that different temperature

is detected and warning is mode against high temperatures. Any obstacle on the path is detected by the IR sensor which stops the wheel chair[8] and alerts the user. The FSR pressure strips wait for the application of pressure by the user in figure 3.The movements such as forwarded and back warded different amount pressure figure 1. The basic system starts after application of supply voltage and remain in stand by condition shown by a led. Voice recognition sensor can have the facility choosing the speed in two levels slow are fast figure 2 .For instance the user need to move in a short distance are object nearby slow speed may be selected shown figure 4 . All these modules are interface placed on board along with arduino and microcontroller shown figure 5.

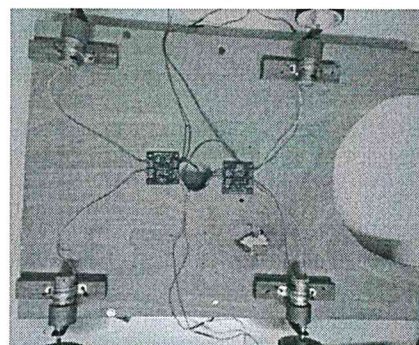
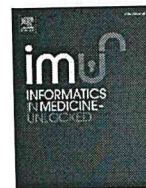


Fig. 1: Wheel chair board bottom view





# Heterogeneity of human brain tumor with lesion identification, localization, and analysis from MRI

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## ARTICLE INFO

### Keywords

Abnormality detection  
Brain tumor  
Segmentation  
Heterogeneity  
Magnetic resonance imaging  
Accuracy estimation

## ABSTRACT

**Objective:** Accurate identification of brain tumors and their heterogeneity is a critical task in planning for proper therapy. A reliable fully automatic detection and analysis method for the brain tumor is necessary for an efficient measurement of the tumors and their extent. This paper presents a computerized approach to brain tumor-edema detection and analysis from the MRI of brain sequences.

**Method:** Computer-aided diagnosis systems are focused on several research activities, and the ideas of the study of brain images with the diverse modality of heterogeneity by applying better image analysis algorithms. The proposed automated modern approach includes several stages of image segmentation, area and volume calculation, and locational findings using statistical and an unsupervised clustering prediction method.

**Result:** The outcome of the proposed computerized method is compared with reference images and gives very promising results. Performance of our proposed methodology is also assessed with the gold standard recent comparable method, and our method gives better results in the context of accuracy and error metrics.

**Conclusion:** The proposed method is capable of improving the overall detection, segmentation, and quantification of a variety of tumors for different cases from multiple standard datasets.

## 1. Introduction

Recently, automated diagnosis has involved medical image segmentation to extract the abnormal lesions from magnetic resonance imaging (MRI) of brain. The types of tumors vary due to several characteristics such as nature, volume, shape, number and locations of lesions. MRI offers an advanced concreteness of flexible tissue composition to appropriate segmentation. The correct segmentation methods have a high correlation with image modality and the significance of tissues. Thus recognition of abnormalities is critical in diagnosis and treatment due to the multiplicity of intracranial diseases including brain tumor, edema, cerebral aneurysm, characteristics, vascular malformation, trauma, heterogeneity or changes in radio and (or) chemotherapy. Computer Aided Diagnosis (CAD) methods have added a new dimension for physicians to achieve a faster and more perfect identification.

The CAD is field-explicit because it is precise for a particular category of diseases, focuses on a specific portion of the body and is diverse in diagnostic technique. The diverse kind of input includes stated indication, pathological tests, health checkup, and brain images corresponding to domain-specific areas. Development of such CAD systems is demanding because they unite the basics of segmentation, artificial intelligence, machine learning, statistics, deep learning and MR image analysis. This effort proposes a CAD structure to assist radiologists in the recognition of tumor lesions in MRI scans from the human brain to predict their natures. A number of the older mechanisms [1] dealt with the problems of the segmenting area of solid tumors. The earlier effort was used by a spatially biased k-means histogram-based clustering method, while, in the later effort, the authors apply a multi-resolution computer-generated annealing technique. A more modern work - a thresholding method based on Fuzzy C-Means (FCM) cluster [2] was used to eliminate the entire non-brain area. The outcome of that

DOIs of original article: <https://doi.org/10.1016/j.imu.2019.100246>, <https://doi.org/10.1016/j.imu.2018.02.006>.

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<https://doi.org/10.1016/j.imu.2019.100243>

Available online 10 September 2019

2352-9148/© 2019 Published by Elsevier Ltd.

## Performance of M/M/1 and M/D/1 Queuing Models on Data Centers with Cloud Computing Technology Using MATLAB

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### Abstract

Cloud computing was the technology developed to store the info and support the users with the access to the info hold on by charging a token quantity for the storage of information and for providing necessary steps for storing the info and for providing security to the info that was hold on. The content hold on in varied servers at varied locations supported the sort and size of the content. The content may be accessed to the users with valid registrations and a group of security verifications entered by the purchasers. The content that was hosted within the servers can even be used for hosting varied applications and varied alternative set of choices of systems in varied fields. It's one among the foremost illustrious and principally used analysis areas within the recent years for additional development in varied set of applications and its usages associated with many set of shoppers within the real time setting. Performance analysis in cloud computing has been another major thrust space within the recent past, that is of crucial interest for each cloud suppliers and cloud customers. Solely few notable works are revealed with regards to performance analysis in cloud computing. Typically analytical models established for assessing the operating and therefore the performance of cloud server farms may be studied beneath kind of configurations and assumptions are supported queuing theory and its accuracy is verified with numerical calculations and simulations. The issues at hand create to the task of evaluating the performance of information center with varied queuing models to grasp the distribution of the performance parameters with arrival and repair rates, traffic intensity, range of servers and therefore the associated possibilities. The goals of this thesis is to supply a framework through programs associated with queuing models and value the performance parameters, try validation, sensitivity analysis and build comparisons for information centers. Gift thesis evaluates the performance parameters of cloud information centers supported queuing theory for each single server and multi-server models. The steady state performance parameter formulations known are programmed in MATLAB® setting. The models considered for evaluation for single servers include M/M/1, M/G/1, M/D/1. Service rates have a wider range of distributions including exponential, generalize and Erlang type.

**Keywords:** Cloud computing, queuing models, exponential distribution

Received (December 26, 2017), Review Result (February 16, 2018), Accepted (February 18, 2018)

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## Shape Recognition Based on MapReduce and In-Memory Processing on Distributed File System

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### Abstract

Two novel approaches for centroid-radii based shape retrieval on distributed file system are proposed in this paper. Modified Centroid-Radii model is used for calculating the shape features of trained images. These shape features are stored into Hadoop Distributed File System (HDFS) instead of relational database, generally used for feature storage. HDFS can store large number of shapes that is not possible to be stored in a single machine. Modified Centroid-Radii Model is also used to calculate the shape feature of query image. In one approach MapReduce query is used for recognizing binary shape. In another approach Apache Spark is used. Shape feature of query shape is compared with the shape features stored in HDFS. In-memory processing of Apache Spark used to increase the speed of retrieval process. Spark based image retrieval is faster than MapReduce based image retrieval.

**Keywords:** Shape Retrieval, Distributed File System, HDFS, MapReduce, In-Memory Processing, Spark, Image Big Data

### 1. Introduction

Image retrieval is an active research area for long time. Content Based Image Retrieval (CBIR) recognizes image based on content of the query image. Content based features [1] are basically represented as multi dimensional array or vectors. There are mainly 4 types of features like texture, colour, shape and location. CBIR consists of two phases: training phase and testing phase. In training phase, a large number of images are taken as training images with known image type. Features of these images are calculated and stored in image database. Next phase is called testing phase. In testing phase, features of a test image with unknown image type are calculated in same way as training phase. Then features of the test image are compared with features of training images in the database. Distance measure like Euclidean distance or other is used as similarity metric. Image type of unknown test image is recognized this way.

Distributed File System manages the storage of data across machines, when dataset outgrows the storage capacity of single computer. The distributed file system of Hadoop is called Hadoop Distributed File System (HDFS). Over the years HDFS has become a key tool of managing big data [2, 3] analytics applications. These types of applications are defined by 3Vs- volume, velocity and variety. Volume refers to huge amount of data

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Received (October 26, 2017), Review Result (January 15, 2018), Accepted (January 17, 2018)

## Adaptive Fuzzy PI Current Control of Grid Interact PV Inverter

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### Article Info

#### Article history:

Received Oct 15, 2017

Revised Jan 7, 2018

Accepted Jan 22, 2018

#### Keyword:

Adaptive Fuzzy PI Controller  
Propositional Integral control  
Renewable Energy Sources  
Three phase Inverter

### ABSTRACT

Now a day's, Photo Voltaic (PV) power generation rapidly increasing. This power generation highly depending on the temperature and irradiation. When this power interface with grid through the voltage source inverter with PI controller. Its gains should be updated due to the parametric changes for the better performance. In This Work Fuzzy Controller updates the gains of the proportional integral (PI)s Controller under variable parametric conditions. the gaines of the PI Controller are updated based on the error current and change in error current through the fuzzy controller. The error current in direct and quadrature frame are the Inputs to the PI controller. The PI Controller generates the reference voltage to the pulse width modulation technique. Here reference voltage is compared with the carrier signal to generate the pulses to the 3-Ph Inverter connected to the grid. This controller has given well dynamic response with less steady state error and also given The less THD of the grid current compared to the PI and Fuzzy controller. It Is implemented and verified in MATLAB Simulink.

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### 1. INTRODUCTION


With development of renewable energy technologies, different inverter structures and control systems are investigated for renewable energy supplied inverters. In the old literature, PI or PID controllers are used to control the voltage source inverter (VSI) interact grid. PI controller with fixed gains for the fixed operating point provides an acceptable performance, but poor transient performance is obtained when the inverter operating point varies continuously is depending on the dynamics of the plant and also depending natural conditions such as solar radiation in case of the PV system and wind speed [1]. More ever voltage, frequency of the grid also may change and line impedance during the operation of the inverter [2]. Hysteresis current control has benefits of simple Implementation, robust structure, high stability, fast response, it has disadvantage of the variable switching frequency causes interference to communication lines, design of filter difficult, switching loss more [3-5]. Studies on different topology in inverter such as multilevel inverter and HERIC inverters connected to the grid with linear control was used to achieve the high converter efficiency with minimizing the switching loss [6]. Transformer less inverter topology are studied with linear controls and hysteresis control and dead beat control method to improve the efficiency of the single phase inverter connected to the grid. However, feed forward of the voltage and inverter current are used to improve the performance of the inverter connected to the grid when the delay in the control time and variations on passive elements values affect the deadbeat control were proposed [7]. Although, to improve dynamic response of the



# Effect of Alkali Activators on Different Curings of Compressive Strengths of Geopolymer Concrete

K. Jagadeeswari, Bikash Singh, P. Harish · Published 2018 · Materials Science

The last two decades have experienced on any ill effects of greenhouse emissions on earth. The main effect is environmental pollution. On the other hand, due to the pollution humans are suffering from serious health problems. India is fast growing in infrastructure and plenty of construction activity is happening around. In construction industry major activity is production of Portland cement; indirectly we are increasing the CO<sub>2</sub> content in atmosphere by the production of Portland cement... Expand

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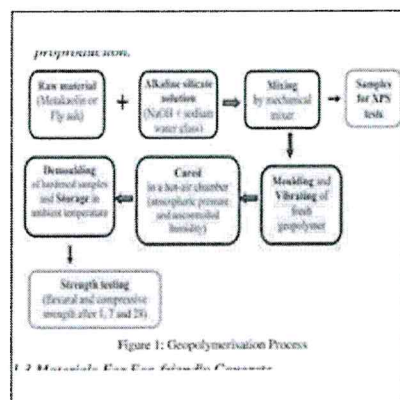


Figure 1

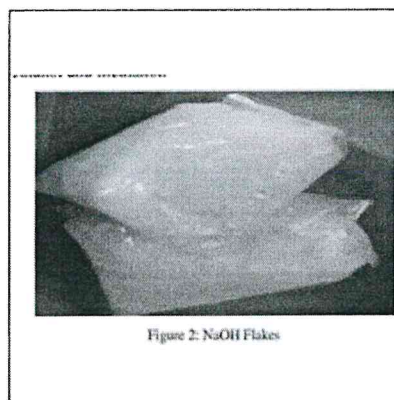


Figure 2

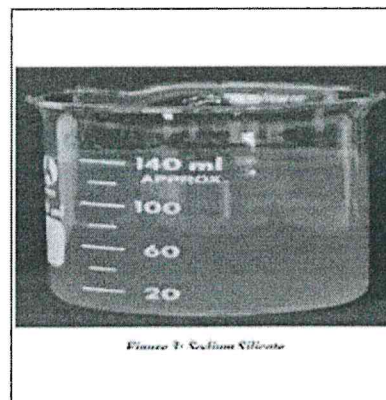


Figure 3

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## Study on Deviations and Settlements of Rails and Its Maintenance in Broad Gauge Railway Track

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### ABSTRACT

The deviation of Rail track is a problem that had happened on Rail road systems. This resulting in the noise, vibrations, fuel consumption and taking more time. Since small changes in the aligned track will result significant change in the total cost of travel. For this, there are manual methods however it is more complex one and needs more manpower. So now a days instrumental and machinery utilization becomes more faster and cost effective to settle various issues on railway track. The aim of this paper is to identify the location with oms, direction and amount of deviation occurred on the Railway track. The Methodology of this study involves collection of reduced level's for 40km and deviations and settlements which are observed through the selected track and then these Horizontal deviations and vertical settlements are further analysed to calculate Track Geometry Index (TGI) with the help of Analytical approach called track degradation Concept. The basic tests on soil and a few descriptions about the Embankment soil and Ballast is investigated and are compared with the Recommended specifications of Indian Railway. TGI value obtained is 51.6 which comes under second condition that is need for basic maintenance as specified by Indian railways

**KEYWORDS:** Track ; Deviation ; Rail ; Geometry Index and Alignment.

Date of Submission: 06-04-2018

Date of acceptance: 21-04-2018

### I. INTRODUCTION

Railway track is one of the main railway facilities and the basis for train operations. Safe, stable, and uninterrupted train operations primarily depend on continuous track regularity [19]. Rail traffic accidents due to derailments are nowadays become a common problem and lead problematic to Indian railways. Railway track plays a base element in railway system and is greatly and directly influences on safety and cost efficiency. Investigations have been carried out for the identification of problems and are associated with track degradation process, which causes a low level of safety, which causes traffic accidents have become a social-economical problem. Indian Railway always improves the condition of the track for its good operating, but the problems in a single kilometer of the track will result in the lakhs to be repaired. Hence the total (LCC) Life cycle cost will be in crores [15]. In present study, as the load goes on increasing and the design is old, but no improvements done in last five years for beneath layers of embankment and the changes in seasonal effects and shows impact on embankment stability, which results in causing deviations. However, due to changing temperatures and the resulting unstable mechanical properties of layers, considerable difficulties have been encountered.

Track degradation from Geometrical aspect is considered for analysis and adopted. This study deals with geometrical perspective of track degradation; twist deviation parameter is very much defined for tracks and its effects [1]. The roles of several parameters that influences railway track deterioration most, are examined and with a view to make railway track maintenance more effective and cost efficient [8]. TGI is a new parameter to get more information about track geometry and the track maintenance standard can be judged [9].

The present area considered for study purpose is East Coast Railway and surveyed for Vertical settlements and horizontal deviations. This paper tends to analyze the deviations of rails, and compares standards between field measurements and Design standards.

### II. PROBLEM DESCRIPTION

The deviations of Rails in a Railway track are an issues which are common in all Railways, that results in the vibrations, noise, fuel consumption and time taken. Since the small change in the alignment will result in



# Study of Discharge Variations with Increased Impermeable Cover – A Case Study of Vignan's Institute of Information Technology, Visakhapatnam

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**Abstract:** - The analysis of the change in the flood run-off phenomena due to urbanization of the drainage basin is an important problem in the actual flood control project. As with all aspects of the water cycle, the interaction between precipitation and surface runoff varies according to time and geography. In the present study the runoff is estimated with existing surface layers. The impervious surface area is 37325.362 m<sup>2</sup> and the surface discharge is 14250.823 m<sup>3</sup>. The study is also focused on how much amount of discharge increases with increase of every 5% impermeable cover. The increased discharge with impermeable is 14% for 10-20% ,27% for 35-50% and 36% for 75-100%.The ground slopes of the VIIT Study area is prepared by using Arc GIS technique.

**Key words:** Impermeable cover, slope map, discharge, Rain fall and permeable cover

## I. INTRODUCTION

Water is inevitable thing for life .Life can't be imagined without water .The population of world is increasing day by day so is the consumption of water with .With the increase in population the occupancy of land is also increasing which results in destruction of trees and forest area .Rain is not happening in time due to pollution and other human needs .Thus the concept and practice of rainwater harvesting comes into play

The lands covered by trees, plants, grass or through which water can percolate into soil are called pervious (vegetative) lands. And the lands other than the vegetative are called impervious land (i.e. the water can't percolate into it).

As rainfall occurs first the water percolates down into the soil due to its permeability nature but with increase in duration and intensity of rainfall the percolation stops and rainwater flows over the surface as flood which causes erosion of soil .But as the percolation doesn't happen in impervious layer this rainwater flows on pervious layer which increase the flow of water on the pervious layer .The more the increment of impervious layer the more will the runoff volume.

## II. STUDY AREA

### Location

The VIIT Campus lies in Duvvada (Gajuwaka mandala, Visakhapatnam) at 17.7106°N longitude and 83.1638°E

latitude.The campus is at a distance of 1.8 km from duvvada railway station. The campus has wide open area and has hill in north side at 5 km distances .There is no lakes or river in the range of 1km of the campus .The surrounding climate is warm and humid .The soil found in the campus area is red, gravel, and sandy.

### Description

The campus has seven buildings. The total area of college is 152186.922sq.m.(impermeable area is 37325.362sq.m. and vegetative area is 114861.56sq.m.). Nearly 6000 students are studying in this campus. The precipitation on the campus area is being drained out into drains which ultimately find its way into sea. The precipitated water cause erosion of the soil. Thus, to utilize the water for recharging the ground water table and prevents the erosion of soil, pits or trenches are being constructed. The location of VIIT campus as shown below fig.1.

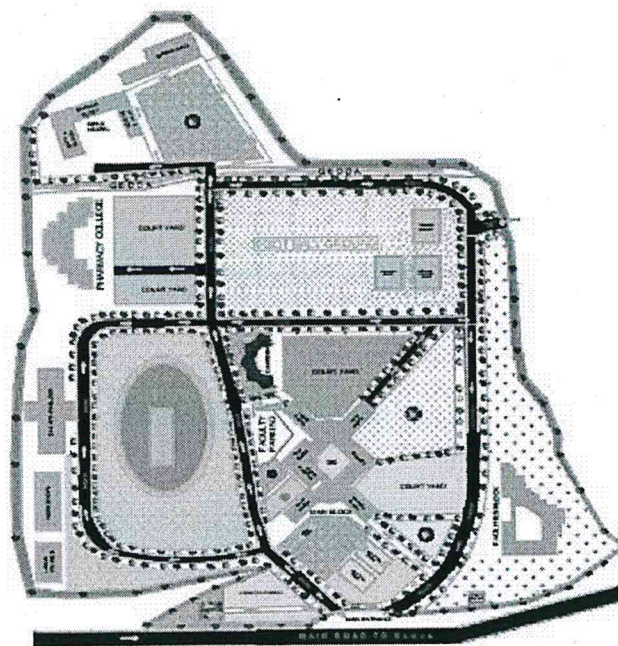


Figure 1. Map of study area.



# Study on Watershed Analysis for Sustainable Soil Conservation and Watershed Development in GVMC Area, Visakhapatnam

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**Abstract:** The aim of the frame work is to create a mechanism that would allow for development while protecting soil and water resources in the region using science-based decision making. The geospatial technologies like remote sensing and GPS, GIS are useful for fast and cost-effective study of different applications with accuracy. The main focus of the study is to develop the watershed boundary and sustainable soil conservation in GVMC AREA using GIS. Different maps have been generated from satellite images and USGS EARTH EXPLORER using remote sensing and GIS. The maps are prepared by using satellite images and raw maps of GVMC toposheets generated by geological survey of India. Finally, watershed map is obtained from digital elevation model (DEM). The final output of the study gives different conservation measures for soil and water within a watershed boundary with reference to the remote sensing and GIS data.

**Keywords:** GIS, Landsat-8, DEM, LULC map, slope map, watershed

## 1. Introduction

Land and water are the most precious natural resources, the importance of which in human civilization needs no elaboration. The total available land area in the State sets the limits within which the competing human needs have to be met. The needs of agricultural, industrial, domestic and others often result in diversion from one use to the other. Diversion of land from agriculture to non-agriculture uses adversely affects the growth in agriculture sector. Even the available land is subjected to soil-erosion of varying degrees and degradation problems of different magnitudes. Water supports all forms of life on this mother earth. It plays a vital role in agricultural and industrial development and sustaining human life. Rainfall is the only source of water. The water is confined as i) soil moisture, ii) stored water in surface storage like reservoirs, tanks, ponds, temple tanks, and in open wells etc., iii) groundwater in sub surface, iv) sea water and v) waste water like sewage and effluent. Depending upon the rainfall, its intensities, and frequencies, an area becomes drought or flood affected. On the other hand, the land is subjected to soil erosion and land degradation problem due to rain or wind action and faulty cultivation practices resulting in loss of topsoil, which is the place where all nutrients are available. This leads to poor yields, uneconomic returns, reservoir sedimentation, and reduction in storage capacity.

## Study area Location

The study area the Greater Visakhapatnam Municipal Corporation (GVMC) is located between 1703213011 - 1705213011 northern latitude and 8300413011 - 8302413011 eastern longitude. The urban area of GVMC is divided into six zones. These six zones are further divided into 72 municipal wards covering a total area of 545km<sup>2</sup>. The city is bounded by Bay of Bengal on eastern side, Duvvada hills, (Adavivaram hills) on the western side, Yarada konda on the southern side and Madhurawada dome on the north side. The location map of study area is given in (fig. 1).

## Description

The study area is one of the major municipal corporations in the state of Andhra Pradesh. The area is famous for industries and tourism; often it is called as industrial city or city of destiny. The area has the reserved forests within the jurisdiction of GVMC. Due to recent developments such as IT Park and other constructions have come up in thick vegetated hilly area resulted in reduction of reduced forest cover. The area is well connected by rail, road, air and water (sea). According to 2011 census, the area has 1.7million population. High density population is located in the vicinity of GVMC area. The fringe area has very low density population where as areas like chinthala, Agrapharam, Adavivaram, Gambhiram appears to be rural. Extensive agriculture is the major land use in these villages.





## EXPERIMENTAL STUDY ON M30 GRADE CONCRETE WITH PARTIAL REPLACEMENT OF CEMENT WITH EGG SHELL POWDER

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### ABSTRACT

*An experimental study, on M30 grade concrete after partial replacement of cement with Egg Shell Powder (ESP), has been done to reduce the cost of concrete without affecting its compressive strength. The study reveals that the use of ESP, which has been collected from poultry industries, as a good replacement for Ordinary Portland Cement (OPC) in M30 Grade concrete as it has been given good results. The reason behind choosing the ESP as partial replacement since it has nearly same chemical composition as that of limestone. In this study M30 grade concrete cubes have been casted according to IS 10262:2009 by replacing the cement with the ESP at 0%, 5%, 10%, 15%, 20%, and 25% by its weight as partial replacement. The compressive strength of the casted cubes have been determined after 7 and 28 days moist curing and compared with the characteristic strength conventional concrete. The results reveal that at 10% ESP replacement the strength is higher than conventional concrete and indicates that 10% ESP is an optimum content for maximum strength. Among the products like Rice Husk Ash, Fly Ash, Silica Fumes etc. the Egg Shells are also known to have good prospects in minimizing the usage of cement.*

**Keywords:** M30 grade concrete, Egg Shell Powder, Ordinary Portland Cement, IS 10262:2009, Partial Replacement

## Employee Ranking Application using Univariate Marginal Distribution Algorithm (UMDA)

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### Abstract

*In powerful conditions, it is critical to track changing ideal arrangements after some time. Univariate Marginal Distribution Algorithm (UMDA) which is a class calculation of estimation of conveyance calculations pulls in more consideration lately. In this paper another multi-population UMDA (MDUMDA) is proposed for dynamic multimodal issues. This approach utilizes both the data of current population and the part history data of the ideal arrangements. The exploratory outcomes demonstrate that the MDUMDA is successful for the capacity with moving ideal and can adjust to the dynamic conditions quickly. Employee ranking application gives ranking of every employee in light of various characteristics.*

**Keywords:** Univariate Marginal Distribution Algorithm, Optimization, Ranking

### 1. Introduction

Albeit the vast majority of the enhancement issues examined in the logical writing is static, some true issues are dynamic for example, information mining in persistently refreshing databases, booking issues with dynamic accessible assets [1,2]. In these dynamic improvement issues, the assessment capacity (or wellness work) and the requirements may change after some time. So for these issues the improvement calculation needs to track a moving ideal as nearly as could be expected under the circumstances, as opposed to simply finds a solitary decent arrangement. This structures a genuine test to customary transformative calculations since they can't adjust well to a changed situation once united [3]. Typically, the dynamic condition expects EAs to keep up adequate decent variety for a constant adjustment to the evolving scene.

Notwithstanding, much of the time, the learning about past pursuit space might be useful to quicken the inquiry in the recently changed condition. So great adjustment for dynamic enhancement calculations should keep up and increment the assorted variety and make full utilization of learning of past condition. There are numerous techniques that have been proposed for dynamic advancement issues [5].

#### 1.1. Employee Ranking Application

The current application proposed in the article concentrates on the performance of employees in both work as well as other fields to select best performer of the employee in an academic year. This system deals with ranking of the employee based on multiple

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Received (December 18, 2017), Review Result (March 11, 2018), Accepted (March 20, 2018)

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swapna priya  
cheekatla

## IMAGE REGISTRATION TECHNIQUES FOR (CTMRI)

Authors Banavathu Mounika Mrs. Cheekatla SwapnaPriyam

Publication date 2018

Journal International Journal of Engineering Applied Sciences and Technology, 2455-2143,  
Pages 48-51 Published Online June 2018 in IJEAST (<http://www.ijeast.com>)

Volume 3

Issue 2

Pages 48-51

Publisher ijeast

# Applications, Challenges and Protocols of MANETs: A Review

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## Abstract

Portable means moving and specially ad hoc means brief with no settled framework so versatile impromptu systems are a sort of impermanent systems in which hubs are moving with no settled foundation or unified management[1-3]. Mobile Ad-hoc arrangements have been broadly looked into for a long time. Impromptu system is a gathering of hubs that is associated through a remote medium shaping quickly evolving topologies. Remote gadgets are always developing in correspondence field having all the more figuring speed and various highlights, while contracting in weight and size. Versatile specially appointed systems (MANETs) speak to complex conveyed frameworks that involve remote portable hubs that can openly and powerfully self-arrange into self-assertive and transitory system topologies. Individuals and gadgets are permitted to flawlessly internetwork in regions with no prior correspondence framework, e.g., fiasco recuperation conditions. Steering in Mobile Ad-hoc Networks is a testing undertaking because of its incessant alteration in topologies. We examine in this paper directing convention, difficulties and security of specially appointed systems.

Keywords : Characteristics, Routing Protocols, MANETs, Challenges, Protection.

## 1. Introduction

The multiplication of portable figuring and specialized gadgets (e.g., phones, tablets, handheld advanced gadgets, individual computerized partners) is driving a progressive change in our data society[4]. We are moving from the customary wired interchanges to remote correspondences. Remote systems comprise of various hubs which speak with each other over a remote channel. There are right now two varieties of portable remote systems: foundation and framework less systems. The foundation systems, in which cell phones speak with base stations that are associated with settled system framework. Every hub in the foundation systems is inside the scope of a settled access point like base station. Utilizations of this sort incorporate cell phone and remote neighborhood. The other kind of remote system, foundation less systems knows as MANETs[2]. These systems have no settled

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Received(November 10, 2017), Review Result(1st: December 1, 2017, 2nd: December 31, 2017), Accepted(January 5, 2018)

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## A Review on Industrial Applications of Machine Learning

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### Abstract

*Machine learning is the rapidly growing technology in the field of almost all recent technologies in the market. With the successful application of machine learning in almost all the recent technologies, the growth in all the areas was splendid. The growth in those areas has crossed the expectations of the scientists. Recently, the application of machine learning in the areas of medicine and pharma is growing in the recent times in a rapid fast. In the current paper, the authors represent the seven applications or the areas in the field of medicine and pharma where the applications of the machine learning were implementing and good results are obtaining.*

**Keywords:** Machine learning, medicine, pharma, supervised learning, unsupervised learning, artificial intelligence, artificial neural networks

### 1. Introduction

Machine learning is the recently developing technology in the field of computer science and its related areas [1]. Even though the existing of the machine learning and its techniques, algorithms was existing form so many years, now it is in the stage of growing from time to time. The current development in the area of the machine learning and its areas are becoming more famous and more important from day to day. Now a day, the machine learning algorithms and techniques were used for various applications like voice assistants, self-driving cars and other applications. As per the current day applications were being used by all the people who can use the applications from day to day life. As these applications are using more and more, the utility of these applications becomes faster and faster and also becoming smarter and smarter [2].

Some of the recently used applications that were making a great impact on the society and its applications are discussed in detail. Some of the applications are Google Maps which can be sued for identifying the traffic routes for various locations and the identifying the various available routes from unknown places to the known locations [3]. The other applications that are using some other applications include Amazon and Walmart. These applications are useful for almost all people in the society. The other applications are the social networking applications are Facebook. By using this application, the people from various locations can interact with each other. Several other applications are discussed in the next sections and discussed in detail.

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Received (June 3, 2018), Review Result (August 22, 2018), Accepted (October 7, 2018)

## Security Issues and Attacks in Wireless Sensor Networks: Some Case Studies

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### Abstract

Remote sensor arranges is a standout amongst the most developing innovation for detecting and playing out the distinctive undertakings. Such systems are valuable in numerous fields, for example, crises, wellbeing observing, ecological control, military, ventures and these systems inclined to malignant clients' and physical assaults because of radio scope of system, un-put stock in transmission, unattended nature and get to effectively. Security is a crucial necessity for these systems. In this paper, our focal point of consideration is on physical assaults and issues in remote sensor systems. Through this audit, effectively distinguish the reason and abilities of the aggressors. Further, we talk about understood methodologies of security discovery against physical assaults.

**Key words:** Physical attacks, Wireless sensor network, Security

### 1. Introduction

The security of system is a major issue for security executives since organize is developing step by step. Security on the Internet and on Local Area Networks is currently at the bleeding edge of PC organize related issues [1]. The alluring highlights of systems, for example, open medium, dynamic topology, nonattendance of focal experts, and disseminated participation hold the guarantee of altering the specially appointed systems over a scope of common, logical, military and modern applications. Nonetheless, these attributes make MANET systems powerless against various sorts of assaults and make executing security in specially appointed system a testing assignment. The fundamental security issues that should be managed in MANET systems include: verified gadgets, the protected directing in multi-bounce systems, and the safe exchange of information. This implies the collector ought to have the capacity to affirm that the personality of the source or the sender (*i.e.*, one bounce past hub) is for sure who or what it cases to be: It likewise implies that the collector ought to have the capacity to check that the substance of a message has not been changed either malignantly or incidentally in travel.

Remote Manet is another foundation less correspondence innovation which is comprises of those conditions where administration of framework costs high. Aside from this legitimacy it has bad marks as far as secure correspondence. Manet is characterized by its highlights like self sorting out, circulated application and multi hub steering. Because of its dynamic nature keeping up the secured correspondence is monotonous when brought together administration does not exist. In such condition key administration plans is a troublesome assignment to accomplish a protected correspondence. Utilizing overseeing of secure key dissemination for security speed fluctuates with respect to the

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Received (January 5, 2018), Review Result (April 16, 2018), Accepted (April 21, 2018)

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## Security and Assurance Aspects to be Observed in Cloud Computing Based Data Centers: A Study

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### Abstract

Disseminated registering shift the submission programming and information places to the gigantic server ranches, where the organization of the data and organizations may not be totally tried and true. With the nearness of the web and the improvement of electronic business entries and relational relations, affiliation done the biosphere marks a generous measure of insights arrange by organize. Additionally coordinate security issues are at the present time persuading the chance to be essential as civilization is touching towards modernized data age. It fuses underwriting of access to data in a structure, measured by the scheme chief. This article discussion around the cutting edge for a wide degree of cryptographic considers that are exploited by a bit of systems association submissions. This positions various novel safety confront which contain totally realized. In this paper, we generally spotlight on perspectives for offering safety to information accumulating in dim, furthermore building for information amassing that are realized by additional expert centers dealers in dim, key concentrations for showing safety for further information storing.

**Keywords:** security techniques, space issues for security, architecture, cloud computing, firewalls

### 1. Introduction

The inspiration for organizations to consider distributed computing lies in the always developing difficulties that go with the developing progression of the market and the ever fiercer aggressive field [8, 14]. The utilization of figure concentrated data innovation (IT) is in the mean time a crucial piece of business activities, to empower business procedures to be better focused on and new business arrangements provisioned with more noteworthy adaptability and speed. The opposite side of this coin is the high expenses for obtaining, working, and keeping up the IT. These costs just once in a while legitimize finish scope of the most extreme expected programming and asset prerequisite, for instance stockpiling and figuring limit. Notwithstanding enhancing productivity and speed, endeavors in this manner likewise need to acknowledge cost reserve funds and advance the IT security of their framework in the event that they need to remain focused [16]. Distributed computing can be the following stage toward enhancing IT administrations and improving utilization of existing limits.

The idea that structures the reason for distributed computing portrays different conceivable methodologies to ensure its dynamic organization assets, for example, stockpiling limit or processing power and additionally inner undertaking administrations or administrations crosswise over organization limits. Distributed computing frameworks permit foundation assets and application administrations to be obtained on request as an

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Received (January 21, 2018), Review Result (April 15, 2018), Accepted (April 21, 2018)

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## Studies on the TMS Using IR Sensors for Avoiding Congestion in Traffic on Indian City Roads

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### Abstract

*In the current research article, a comprehensive presentation of the developed transport monitoring system was explained. The present monitoring system was developed and implemented with the help of count sensors, microcontroller and other units necessary to advise the drivers whoever using the busy roads. The current system works by processing the data that was being collected from the sensors that were placed in the ground of the roads. The main goal of developing this traffic monitoring system was to collect the movement of vehicles that were moving on a selected busy roads over a period of time and suggest the drivers to take other available routes in the city such that to reduce the congestion on the city roads. Based on the number of vehicles that were being travelling towards the road by crossing the sensor units were calculated and the suggestion was given to drivers whoever using such roads in terms of heavy traffic, moderate traffic and light traffic to the drivers. The data from the sensors will be collected by a system that was placed at the side of the road and the monitoring system will process the data and three available appropriate decisions will be given to the traffic signal that were placed at the various signal points before to the actual busiest signal point. Based on the traffic signal lights of the monitoring system, the drivers can take the decision of diverting the vehicle to other possible routes such that the congestion in heavy traffic roads can be avoided such that the time travelling time of the passengers can be reduced. The present system was deployed on the selected roads and collected the results at various timeslots and the signals were being tested with various set of results that were evolved with various time slots. The results were tabulated in the results section and the future scope of the traffic monitoring system was also discussed in the conclusion section.*

**Keywords:** Traffic Monitoring, IR Sensors, 8051 Microcontroller, Congestion avoidance in traffic

### 1. Introduction

Management of traffic issues in the real world environment are the latest research issues in the world. Several applications were being developed in the developing countries to make the traffic simple and make the passengers easy and comfort in the city for driving of vehicles [1, 2]. Traffic monitoring systems will help a lot in administration of the traffic at various levels and also to avoid the traffic problems to the drivers who were travelling in the heavy traffic roads with huge traffic [4, 5]. By using this type of monitoring systems, the transportation in the cities can be managed in terms of smarter

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Received (November 5, 2017), Review Result (January 8, 2018), Accepted (January 17, 2018)

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## Some Studies on the Security and Space Issues and Challenges in Cloud Computing based Data Centers

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### Abstract

Dispersed registering has been imagining as the bleeding edge outline of IT undertaking. Disseminated registering shift the submission programming and information places to the gigantic server ranches, where the organization of the data and organizations may not be totally tried and true. With the nearness of the web and the improvement of electronic business entries and relational relations, affiliation done the biosphere marks a generous measure of insights arrange by organize. Additionally, coordinate security issues are at the present time persuading the chance to be essential as civilization is touching towards modernized data age. As a reliably growing number of clients interface with the web it pulls in a broad measure of cutting edge gangsters. It fuses underwriting of access to data in a structure, measured by the scheme chief. This article discussion around the cutting edge for a wide degree of cryptographic considers that are exploited by a bit of systems association submissions. This positions various novel safety confront which contain totally realized. In this paper, we generally spotlight on perspectives for offering safety to information accumulating in dim, furthermore building for information amassing that are realized by additional expert centers dealers in dim, key concentrations for showing safety for further information storing.

**Keywords:** security techniques, space issues for security, architecture, cloud computing, firewalls

### 1. Introduction

A few representations are rupturing up the time of diminish figuring [9], which is a work based change and utilization of PC change. The ceaselessly sensible and all the more viable processors, together with the thing as an affiliation (SaaS) [8] enrolling building, pool relationship on a tremendous level. The widening game plan exchange speed and hard so far adaptable structure affiliations influence it still possible that customers to would now be able to purchase as a top priority blowing relationship from information and programming that harp solely on removed server farm [4]. While these electronic online affiliations do give goliath measures of storage space and versatile enlisting resources, this figuring stage move, in any case, is shedding the devotion of neighborhood machines for data strengthen in the meantime. Along these lines, customers are defenseless before their cloud authority relationship for the openness and reliability of their data. Late downtime of Amazon's S3[4] is such a depiction. Ideal conditions of Cloud accumulating: No persuading inspiration to contribute any capital on restrain

Received (January 15, 2018), Review Result (March 2, 2018), Accepted (March 6, 2018)

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### International Journal of Science and Engineering for Smart Vehicles

Volume 2, No. 1, 2018, pp 1-10

<http://dx.doi.org/10.21742/ijsevs.2018.2.1.01>

[Abstract](#)

### Effectively Utilization of Road Divider for Organized Vehicular Traffic using IoT

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### Abstract

Road Divider is generically used for dividing the Road for ongoing and incoming traffic. This helps in keeping the flow of traffic; generally there is equal number of lanes for both ongoing and incoming traffic. The problem with Static Road Dividers is that the number of lanes on either side of the road is fixed. Since the resources are limited and population as well as number of cars per family is increasing day by day at 1.2% , there is significant increase in number of cars on roads. This calls for better utilization of existing resources like number of lanes available. In this paper we are aiming is to formulate a mechanism of automated road divider that can shift lanes, so that we can have more number of lanes in the direction of heavy traffic. The cumulative impact of the time and fuel that can be saved by adding even one extra lane to the direction of the rush will be significant.

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## A Study on Frame Work of H2O for Data Science

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### Abstract

H2O.ai is a centered around conveying AI to organizations through programming. Its leader item is H2O, the main open source stage that makes it simple for money related administrations, protection and medicinal services organizations to convey AI and profound figuring out how to tackle complex issues. H2O is an open source, in-memory, disseminated, quick, and adaptable machine learning and prescient investigation stage that enables you to construct machine learning models on enormous information and gives simple productionalization of those models in a venture situation. In this paper we are going to discuss about the components involved in H2O design, frame work requirements and Life cycle of data science.

**Keywords:** Artificial intelligent, H2O, Data, Science

### 1. Introduction

H2O is an open-source programming for enormous information investigation. It is delivered by the organization H2O.ai (some time ago 0xdata), which propelled in 2011 in Silicon Valley. H2O enables clients to fit a huge number of potential models as a component of finding designs in information. H2O's numerical center is created with the authority of Arno Candel, some portion of Fortune's 2014 "Major Data All Stars". The company's logical counselors are specialists on factual learning hypothesis and scientific streamlining. The H2O programming runs can be called from the factual bundle R, Python, and different situations. It is utilized for investigating and examining datasets held in distributed computing frameworks and in the Apache Hadoop Distributed File System and in addition in the customary working frameworks Linux, macOS, and Microsoft Windows. The H2O programming is composed in Java, Python, and R. Its graphical-UI is perfect with four programs: Chrome, Safari, Firefox, and Internet Explorer [1][2].

H2O is an open source, in-memory, appropriated, quick, and adaptable machine learning and prescient examination stage that enables you to manufacture machine learning models on huge information and gives simple productionalization of those models in a venture domain. H2O's center code is composed in Java. Inside H2O, a Distributed Key/Value store is utilized to access and reference information, models, objects, and so forth, over all hubs and machines. The calculations are executed over H2O's circulated Map/Reduce system and use the Java

#### Article history:

Received (December 17, 2017), Review Result (February 27, 2018), Accepted (June 12, 2018)

## Effective use of Big Data Analytics in Crop planning to increase Agriculture Production in India

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### Abstract

Big Data Analytics is one of the affirmative platforms to implement a large data analytics task which comprises the way to find unidentified correlations, hidden patterns, and other essential data from an extensive distributed dataset. In this paper, applying data clustering to observe disseminated dataset of expansive crop deals for crop planning may additionally lead to the increase within the agriculture production in India. By using demand in crop kind as the clustering factor then predict the schedule of crop sowing or decide which crop should be sown in the season. Quality of inputs is vital to crop quality and yield, therefore availability and accessibility of right inputs to farmers is a key to farmer empowerment. Besides, it predicts the price of crops in further years or a season which helps farmers to adopt the crop cultivation plan. Quality of inputs is vital to crop quality and yield, therefore availability and accessibility of right inputs to farmers is a key to farmer empowerment. As a consequence, farmer will act as backbone to our nation and its economy. This paper emphasizes the usage of Big Data which enables the farmers to improve the really worth in their products thru less pesticides to be focused.

**Keywords:** Big Data Analytics, Map Reduce, Clustering, Crop, ARS, and R

### 1. Introduction

Farming turned to day to day activity for our farmers. This farming was inherited from our ancestors from long centuries. So the conventional methods of farming are not apt for this badly affected global warmed environment. Rains, seasons, ground water levels are out of reach for normal civilian. That's why farmer turned poorer. To resolve this, a complete 360 degree solution is required. Government is spending a lot on gathering agriculture data. Data is growing much quicker than the computation speeds. An instance of Big Data is crop sales. Crop sales data will be used to represent the crops data. Since government has actively and constantly gathering crop sales dataset but the size of dataset are considered to be a big data which are a real-world data, which is really a hard problem to analyze it. In order to analyze big data, data mining and statistical techniques can be expanded under parallel and distributed computing platform, also which consumes large amount of storage and computational time on handling massive dataset. It conforms to its name; Big Data Analytics turns out as an essential research topic. Recently, Big Data got its popularity among data scientists and business fraternity.

### 2. Literature Review

Big data is more real-time in nature than traditional applications. Standard architectures aren't compatible for big data applications (e.g., exa-data, tera-data).

Received (October 18, 2017), Review Result (January 10, 2018), Accepted (January 17, 2018)



## Adaptive Fuzzy PI Current Control of Grid Interact PV Inverter

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### Article Info

#### Article history:

Received Oct 15, 2017

Revised Jan 7, 2018

Accepted Jan 22, 2018

#### Keyword:

Adaptive Fuzzy PI Controller  
Propositional Integral control  
Renewable Energy Sources  
Three phase Inverter

### ABSTRACT

Now a day's, Photo Voltaic (PV) power generation rapidly increasing. This power generation highly depending on the temperature and irradiation. When this power interface with grid through the voltage source inverter with PI controller. Its gains should be updated due to the parametric changes for the better performance. In This Work Fuzzy Controller updates the gains of the proportional integral (PI)s Controller under variable parametric conditions. the gaines of the PI Controller are updated based on the error current and change in error current through the fuzzy controller. The error current in direct and quadrature frame are the Inputs to the PI controller. The PI Controller generates the reference voltage to the pulse width modulation technique. Here reference voltage is compared with the carrier signal to generate the pulses to the 3-Ph Inverter connected to the grid. This controller has given well dynamic response with less steady state error and also given The less THD of the grid current compared to the PI and Fuzzy controller.It Is implemented and verified in MATLAB Simulink.

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## 1. INTRODUCTION

With development of renewable energy technologies, different inverter structures and control systems are investigated for renewable energy supplied inverters. In the old literature, PI or PID controllers are used to control the voltage source inverter (VSI) interact grid. PI controller with fixed gains for the fixed operating point provides an acceptable performance, but poor transient performance is obtained when the inverter operating point varies continuously is depending on the dynamics of the plant and also depending natural conditions such as solar radiation in case of the PV system and wind speed [1]. More ever voltage, frequency of the grid also may change and line impedance during the operation of the inverter [2]. Hysteresis current control has benefits of simple Implementation, robust structure, high stability, fast response, it has disadvantage of the variable switching frequency causes interference to communication lines, design of filter difficult, switching loss more [3-5]. Studies on different topology in inverter such as multilevel inverter and HERIC inverters connected to the grid with linear control was used to achieve the high converter efficiency with minimizing the switching loss [6]. Transformer less inverter topology are studied with linear controls and hysteresis control and dead beat control method to improve the efficiency of the single phase inverter connected to the grid. However, feed forward of the voltage and inverter current are used to improve the performance of the inverter connected to the grid when the delay in the control time and variations on passive elements values affect the deadbeat control were proposed [7]. Although, to improve dynamic response of the

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## Histogram Based Face Recognition

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Periodicity: October - December 2017

DOI : <https://doi.org/10.26634/jip.4.4.14162> (<https://doi.org/10.26634/jip.4.4.14162>)



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## Abstract

Human face conveys more information about identification, expression, and emotions of a person. In today's world every individual in the society wants to be more secure to provide more security. "Facial Recognition" has come into the picture and lead a most challenging role of detecting the face with more accurate results with the efficiency of the face recognition, histogram based facial recognition is chosen, where a face region is fragmented into a number of regions and histogram values are extracted as a single vector. This vector is compared for the similarities between the facial images and provides a most efficient outcome.

## Keywords

Face Recognition, Local Binary Pattern Histogram (LBPH), Histograms, Feature Extractions, Classification.

## How To Cite This Article?

Reddy, S., Kumar, G.R. and Reddy, C.K. (2017). Histogram Based Face Recognition. *I-manager's Journal on Image Processing*, 4(4), 31-35. <https://doi.org/10.26634/jip.4.4.14162>

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## Handwriting Recognition Using HAAR Transform

*The IUP Journal of Computer Sciences, Vol. XII, No. 2, April 2018, pp. 7-17*

Posted: 2 Nov 2018

Kaki Leela Prasad (https://papers.ssrn.com/sol3/cf\_dev/AbsByAuth.cfm?per\_id=3170814)

Vignan's Institute of Information Technology

Pilaka Anusha (https://papers.ssrn.com/sol3/cf\_dev/AbsByAuth.cfm?per\_id=3170818)

Vignan's Institute of Information Technology

Date Written: October 11, 2018

### Abstract

The objective of the paper is to receive intelligible handwritten input from paper documents and convert it into understandable format. Handwriting recognition involves the automatic conversion of text in a document into letter codes which are usable within computer and text-processing applications (Hanna et al., 1997). The information contained within these documents must first be extracted from the hard copy using optical scanner and then stored in a computerized format, which can be easily understood. The data obtained by this form is regarded as a static representation of handwriting (Read et al., 2002a). This technology is successfully used by businesses which process lots of handwritten documents, like insurance companies.

**Keywords:** Optical Character Recognition (OCR), Finite State Machine (FSM), First in First Out (FIFO)

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## A Detailed Review on Mobile Ad Hoc Networks: Protocols, Security Issues and Challenges

N. Thirupathi Rao<sup>1</sup>, Pilla Srinivas<sup>1</sup>, Debnath Bhattacharyya<sup>1</sup> and Tai-hoon Kim<sup>2\*</sup>

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### Abstract

*In this article, an overview of secure specially appointed steering conventions for remote systems was presented. Impromptu system is a gathering of hubs that is associated through a remote medium framing quickly evolving topologies. Assaults on specially appointed system steering conventions disturb organize execution and unwavering quality with their arrangement. We quickly exhibit the most well-known conventions that take after the table-driven and the source-started on-request approaches. The association flanked by the proposed arrangements and parameters of specially appointed system demonstrates the execution as indicated by secure conventions. We talk about in this paper directing convention and challenges and furthermore examine verification in specially appointed system.*

**Keywords:** Routing Protocols, Network security, security issues, Ad hoc Network, safety repair, Wireless Network, Routing Authentication

### 1. Introduction

Wireless networks [4] comprise of various hubs which speak with each other over a remote station which have different kinds of systems: sensor arrange, specially appointed versatile systems, cell systems and satellite systems. Remote sensor systems include of small center with detecting, calculation and remote interchanges capacities. Specially appointed systems are another worldview of remote correspondence for portable hosts where hub versatility causes visit changes in topology. Specially appointed systems are self-configurable and self-governing frameworks comprising of switches and has, which can bolster movability and arrange themselves discretionarily. This implies the topology of the impromptu system changes progressively and unusually. In addition, the impromptu system can be either developed or destructed rapidly and self-rulingly with no managerial server or framework. Without help from the settled framework, it is without a doubt exhausting for individuals to recognize the insider and untouchable of the remote system. In other words, it is difficult for us to distinguish the legitimate and the illicit members in remote frameworks. Due to the previously mentioned properties, the execution of security foundation has turned into a basic test when we outline a remote system framework. On the off chance that the hubs of

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Received (November 23, 2017), Review Result (February 28, 2018), Accepted (March 6, 2018)

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# Simulation on Routing-Toward-Primary-User (RPU) Attack and Belief Dissemination-Based Defense in Cognitive Radio Networks

P. Anusha, K. Leela Prasad • Published 2018 • Computer Science •

International Journal of Innovative Research in Computer and Communication Engineering

**TLDR** Cognitive radio network is an adaptive and self-organizing network, which is capable of responding to the environmental changes such as interference etc, and is prone to various kinds of attacks. Expand

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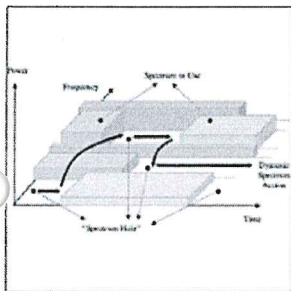


Figure 1

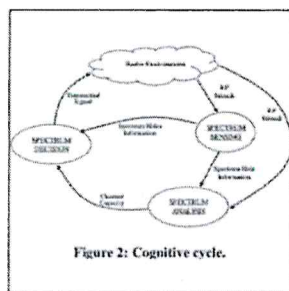


Figure 2

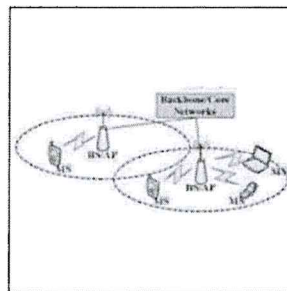


Figure 3

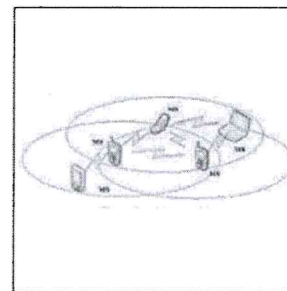


Figure 4

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## Routing-Toward-Primary-User Attack and Belief Propagation-Based Defense in Cognitive Radio Networks

Zhou Yuan, Zhu Han, Y. Sun, Husheng Li, J. Song • Computer Science • IEEE Transactions on Mobile Computing • 2013



# On Ricci pseudo-symmetric para-Kenmotsu manifolds

S. Sunitha Devi<sup>1</sup>, K. L. Sai Prasad<sup>2</sup> and G. V. S. R. Deekshitulu<sup>3</sup>

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Received: 3 October 2017, Accepted: 22 November 2017

Published online: 17 February 2018.

**Abstract:** Considered a para-Kenmotsu manifold with the curvature condition  $S(X, Y).R = 0$  and shown that it is an Einstein manifold. Further, we consider para-Kenmotsu manifolds with the conditions  $R(X, Y).S = fQ(g, S)$  and  $R(X, Y).R = fQ(S, R)$ , known as the *Ricci* and *generalised Ricci* pseudo-symmetric manifolds respectively, and obtained the necessary conditions for these manifolds to be non-Einstein. The notations  $S(X, Y)$  and  $R(X, Y)$  denote the Ricci and Riemannian curvature tensors respectively.

**Keywords:** Para Kenmotsu manifold, Ricci pseudo-symmetric manifold, Einstein manifold, Ricci tensor.

## 1 Introduction

Sato [10] defined the notions of an almost para contact Riemannian manifold. After that, Adati and Matsumoto [1] defined and studied  $p$ -Sasakian and  $sp$ -Sasakian manifolds which are regarded as a special kind of an almost contact Riemannian manifolds. Before Sato, Kenmotsu [9] defined a class of almost contact Riemannian manifolds. In 1995, Sinha and Sai Prasad [14] defined a class of almost para contact metric manifolds namely para Kenmotsu (briefly  $p$ -Kenmotsu) and special para Kenmotsu (briefly  $sp$ -Kenmotsu) manifolds.

As a generalization of locally symmetric spaces, many geometers have considered semi-symmetric spaces and in turn their generalizations. Locally symmetric, semisymmetric and pseudosymmetric para-Sasakian manifolds are widely studied by many geometers [2, 5, 6].

Motivated by these studies, Satyanarayana and Sai Prasad [12] studied Weyl semisymmetric para-Kenmotsu manifolds, and they prove that such a manifold is conformally flat and hence is an  $sp$ -Kenmotsu manifold. Further, they studied [13] Weyl-pseudosymmetric para-Kenmotsu manifolds which are the extended classes of Weyl-semisymmetric para-Kenmotsu manifolds. They showed that every  $n$ -dimensional,  $n \geq 4$ , para-Kenmotsu manifold is a Weyl-pseudosymmetric manifold of the form  $R.C = -Q(g, C)$ . Also, they studied para-Kenmotsu manifolds satisfying the condition  $C(X, Y).S = 0$  where  $C(X, Y)$  is the Weyl conformal curvature tensor and  $S$  is the Ricci tensor of the manifold [13].

In this study, our aim is to obtain the characterisations of Ricci-pseudosymmetric para-Kenmotsu manifolds and also the para-Kenmotsu manifold satisfying the curvature condition  $S(X, Y).R = 0$  where  $R(X, Y)$  is the curvature tensor and  $S(X, Y)$  is the Ricci tensor of the manifold.

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# On a Class of P-Kenmotsu Manifolds Admitting Weyl-projective Curvature Tensor of Type (1, 3)

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Received September 11, 2018; Revised October 23, 2018; Accepted November 24, 2018

**Abstract** We study a class of para-Kenmotsu manifolds admitting Weyl-projective curvature tensor of type (1, 3). At the end, it is shown that an n-dimensional ( $n > 2$ ) P-Kenmotsu manifold is Ricci semisymmetric if and only if it is an Einstein manifold.

**Keywords:** para kenmotsu manifold, recurrent manifold,  $W_2$  - Curvature tensor, ricci tensor, einstein manifold

**Cite This Article:** K. L. Sai Prasad, S. Sunitha Devi, and G. V. S. R. Deekshitulu, "On a Class of P-Kenmotsu Manifolds Admitting Weyl-projective Curvature Tensor of Type (1, 3)." *Turkish Journal of Analysis and Number Theory*, vol. 6, no. 6 (2018): 155-158. doi: 10.12691/tjant-6-6-2.

## 1. Introduction

In [1,2], Sato introduced the notions of an almost para contact Riemannian manifold. In 1977, Adati and Matsumoto defined para-Sasakian and special para-Sasakian manifolds, which are regarded as a special kind of an almost contact Riemannian manifolds [3]. Para-Sasakian manifolds have been studied by Adati and Miyazawa [4], De and Avijit [5], Matsumoto, Ianus and Mihai [6] and many others. Before Sato, Kenmotsu defined a class of almost contact Riemannian manifolds [7]. In 1995, Sinha and Sai Prasad defined a class of almost para contact metric manifolds namely para-Kenmotsu (briefly P-Kenmotsu) and special para-Kenmotsu (briefly SP-Kenmotsu) manifolds [8].

In 1970, Pokhariyal and Mishra introduced new tensor fields, called  $W_2$  and E tensor fields, on a Riemannian manifold [9]. Later, in [10], Pokhariyal studied some of the properties of these tensor fields on a Sasakian manifold. In 1986, Matsumoto, Ianus and Mihai have extended these concepts to almost para-contact structures and studied para-Sasakian manifolds admitting these tensor fields [6]. These results were further generalised by De and Sarkar, in [5]. Motivated by these studies, in 2015, Sai Prasad and Satyanarayana studied  $W_2$ -tensor field in an SP-Kenmotsu manifold [11]. In the present work, we investigate a class of para-Kenmotsu manifolds admitting Weyl-projective curvature tensor  $W_2$  of type (1, 3). The present work is organised as follows: Section 2 is equipped with some prerequisites about P-Kenmotsu manifolds. In Section 3, we define  $W_2$ -recurrent and semisymmetric para-Kenmotsu manifolds and shown that  $W_2$ -recurrent para-Kenmotsu manifold is a semisymmetric manifold. Further, it is shown that the curvature of  $W_2$ -semisymmetric

para-Kenmotsu manifold is constant and hence we establish that a  $W_2$ -recurrent para-Kenmotsu manifold is an SP-Kenmotsu manifold. Section 4 is devoted to study Ricci semisymmetric P-Kenmotsu manifold.

## 2. Preliminaries

Let  $M_n$  be an n-dimensional differentiable manifold equipped with structure tensors  $(\Phi, \xi, \eta)$  where  $\Phi$  is a tensor of type (1, 1),  $\xi$  is a vector field,  $\eta$  is a 1-form such that

$$\begin{aligned}\eta(\xi) &= 1 \\ \Phi^2(X) &= X - \eta(X)\xi; \bar{X} = \Phi X.\end{aligned}\tag{2.1}$$

Then the manifold  $M_n$  is called an almost para-contact manifold.

Let  $g$  be a Riemannian metric such that, for all vector fields  $X$  and  $Y$  on  $M_n$

$$\begin{aligned}g(X, \xi) &= \eta(X) \\ \Phi\xi &= 0, \eta(\Phi X) = 0, \text{rank}\Phi = n-1 \\ g(\Phi X, \Phi Y) &= g(X, Y) - \eta(X)\eta(Y).\end{aligned}\tag{2.2}$$

Then the manifold  $M_n$  [1] is said to admit an almost para-contact Riemannian structure  $(\Phi, \xi, \eta, g)$ .

In addition, if  $(\Phi, \xi, \eta, g)$  satisfies the conditions

$$\begin{aligned}(\nabla_X \eta)Y - (\nabla_Y \eta)X &= 0, \\ (\nabla_X \nabla_Y \eta)Z &= [-g(X, Z) + \eta(X)\eta(Z)]\eta(Y) \\ &\quad + [-g(X, Y) + \eta(X)\eta(Y)]\eta(Z), \\ \nabla_X \xi &= X - \eta(X)\xi, \\ (\nabla_X \Phi)Y &= -g(X, \Phi Y)\xi - \eta(Y)\Phi X;\end{aligned}\tag{2.3}$$



# Multiferroic and magnetoelectric studies on BMFO–NZFO nanocomposites

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Received: 11 October 2017 / Accepted: 24 April 2018 / Published online: 28 April 2018  
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## Abstract

Bismuth ferrite-based multiferroic composites,  $x\text{Bi}_{0.95}\text{Mn}_{0.05}\text{FeO}_3 - (1-x)\text{Ni}_{0.5}\text{Zn}_{0.5}\text{Fe}_2\text{O}_4$ , where  $x$  takes the values of 0.2, 0.4, 0.5, 0.6 and 0.8, have been prepared by combining sol–gel autocombustion and solid-state methods. Phase identification of the samples was done by X-ray diffraction analysis. SEM–EDX measurements on the samples were used to evaluate the microstructural aspects and quantitative evaluation of the samples. Room temperature P–E loop measurements on the samples were done under the application of external electric fields in the range from 0 to 6 kV/mm at a frequency of 50 Hz to understand the ferroelectric strength of the compounds. Magnetic studies on the samples were made by M–H loop measurements in the field range of  $\pm 10$  kOe. Magnetoelectric coupling measurements were made using a dynamic lock-in test set-up. The results indicate that the mixing of nickel–zinc ferrite in  $\text{Bi}_{0.95}\text{Mn}_{0.05}\text{FeO}_3$ , in spite of the enhanced conductivity, has produced considerable improvements in saturation magnetization while retaining the remnant ferroelectric polarization in reasonable magnitudes to obtain improved M–E coupling. Among all the composites, the composite with  $x=0.5$  has resulted better M–E performance.

## 1 Introduction

Multiferroic materials have recently attracted a great deal of interest because of their potential applications in information storage and magnetic field sensors [1, 2]. This new class of materials offers coexistence of long-range order associated with ferromagnetism as well as ferroelectricity [3]. It is believed that the coupling between magnetism and ferroelectricity in these materials could be exploited to induce electrical polarization by the application of magnetic field, and vice versa. Understanding the origin of the coupling is

essential to optimize material properties as well as device fabrication. Many efforts were made by different research groups to understand the fundamental characteristics and the physics involved in the study of multiferroics and coupling among order parameters within single phase as well as composite multiferroics [4, 5]. Among all the single-phase multiferroics, bismuth ferrite (BFO) is the widely investigated material due to its coexistence of ferroelectricity and magnetism at room temperature. It crystallizes into rhombohedrally distorted perovskite structure with space group  $R3c$  while forming spiral spin cycloid with a periodicity of 640 Å. The ferroelectric property of this compound originates from the  $6s^2$  lone pair electrons of Bi ion, whereas its G-type antiferromagnetic spin configuration with superimposed incommensurate cycloid spin structure leads only to weak magnetic properties [6]. Considerable attention has been devoted to understand the behaviour of BFO in different forms such as bulk, thin films and nanoparticles because of its promise for showing coupling strengths in reasonable magnitudes [7]. However, single-phase multiferroics even with chemical modifications are often inadequate to fulfill the requirements of magnetoelectric devices. Instead, composite multiferroics in which each phase presents a different “ferroic” property were reported to enhance the magnitude in the magnetoelectric (ME) coupling by several orders and

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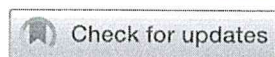
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RESEARCH ARTICLE | AUGUST 16 2018

## Preparation, characterization and PTCR behavior of calcium barium niobate ferroelectric ceramics

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*AIP Conference Proceedings* 2005, 050005 (2018)

<https://doi.org/10.1063/1.5050753>

$\text{Ca}_x\text{Ba}_{1-x}\text{Nb}_2\text{O}_6$  (CBN) ceramics with tetragonal tungsten bronze (TTB) structures are very attractive from academic and technological fronts due to their outstanding ferroelectric properties. Hence, CBN ceramics were prepared by high temperature solid state reaction technique in this work. The phase formation, microstructure and dielectric properties of the prepared samples were investigated by X-ray diffraction, scanning electron microscope and impedance analyzer, respectively. The X-ray analysis confirms the partially filled tetragonal tungsten bronze (TTB) structure. The scanning electron micrographs provide information related to the morphology and grain size distribution of the samples. The dielectric and ferroelectric properties of  $\text{Ca}_x\text{Ba}_{1-x}\text{Nb}_2\text{O}_6$  ( $x = 0, 0.1, 0.15, 0.2, 0.25, 0.3, 0.35, 0.4$ ) ceramics were also measured, and they have been found to be strongly processing-dependent. The frequency dependence of the dielectric constant ( $\epsilon$ ) of the samples have been discussed. Detailed analysis of the structural and dielectric properties suggests that these samples have undergone a phase transition well above the room temperature. DC resistivity studies on the samples are marked by a response of positive temperature coefficient of resistivity (PTCR) in all the compositions.

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# Implementing Robots in Defence Through Motion Capture with Mixed Reality

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## Abstract

Our soldiers are fighting for us, risking their lives and people working in mines spoiling their health. In this paper we will see how we will implement the technology of mixed reality and motion capture will give solutions for replacing humans with robots. We can save a lot of lot of human lives and it will be more cost efficient. As on today we are implementing motion capture in analyzing the responses of military soldiers to test their capabilities and doing animations in movies. So let us extend the existing features to implement a remote robot control system that allows us to replace humans with robots.

**Keywords:** Motion capture suit, Accelerometer, Robots, Motion Capture, Virtual Reality, Augmented Reality.

## 1. Introduction

We can observe the world changing so rapidly. The technology is evolving day by day. Today's world is creating our own ideas and going inside them and design our own world [1]. The technology that is allowing us to bridge the gap between the virtual world and the real world is virtual reality. By scanning the real world data and performing actions as per the scanned data is called augmented reality [2]. Here is a small example of a augmented reality application, We will give a image to the computer and we will program the computer on what to do when it scans the application, from then whenever the computer see that image with that camera it will perform those calculations[3]. Virtual reality is used for architectural visualization, as a gaming platform, Education [4]. Augmented reality is today being used for teaching complex lessons with visual 3d models and animations.

The motion capture technology will send our skeletons data (i.e. the orientation of our skeleton, i.e. the location, rotation). A simple application of motion capture application is the animated movies and video games that we play [5]. In the next phase of this paper we will see how further this motion can capture technology can used [6]. Robotics is the word we hear every day as an engineer. This is a field where we will be implementing robots instead of a human for doing repetitive jobs [7]. Sensors are the physical devices that we will use to determine a physical entity [8]. Well there are several ways we can implement the motion capture technology in several ways [9].

The proposed method is to design human controlled intelligent devices which will work like soldiers during war time. The research work is carried out to save humanitarians by Substituting human beings with Robots. The Robot will act exactly person who is controlling it, Regardless of the place of that person i.e. Soldier can do control from a remote location and all the fighting will be

done by the robot. We will combine the concepts of remote controlled robot arm with motion capture and will generate a wireless motion controlled robots.

## 2. Literature Survey

Remote controlled robots are being implemented in various fields like medicine, automobile industries. Mastura binti Muhammed et.al (2006) was introduced MR-999-E wireless robotic arm. It has modified a remote OS (Operating System) for a robotic arm by means of infrared sensors to remote monitoring [10]. It has a constraint where the infrared can only communicate in a small range. Stevens J et. al (2015) was particularly focuses on provide work for the optimal visual basic in virtual and mixed reality simulations [11]. Amorim et al (2013) this paper is worked on training to guarantee order and law at the same time, get ready soldiers and officers for interventions even in urban areas[12][13]. To allow such training, this service counts with physical built sites to allow soldiers to train how to get inside houses, how to shoot at short ranges ,how to move and shelter while going up in a hill with many houses and corridors on the way. Joaquin Ortiz et. al. (2005) focused on a robotic arm that can differentiate a colour for a golf ball using LabVIEW as a program to control the robot [14]. On the other hand, LabVIEW becomes inefficient when designing complex control algorithm and this will affect the results of the system [15]. Liarokapis et al (2015) this paper worked on the angles for a 3D representation of the human arm. The angles thus obtained are sent using a serial communication port to the Arduino microcontroller, which in turn generates signals which are sent to the servo motors [16]. The servo motors rotate based on the angles given as input. The combined motion of the servos results in a complete Robotic arm movement which is a mimic of the human arm movement. Megalingam et al (2013) in this structure observes the motion of the user's arm using a Kinect [17]. The skeletal image of the arm obtained using the "Kinect Skeletal Image" project



# **A Disparateness-Aware Scheduling using K-Centroids Clustering and PSO Techniques in Hadoop Cluster**

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**Abstract.** Big data storage management is one of the most challenging issues for Hadoop cluster environments, since large amount of data intensive applications frequently involve a high degree of data access locality. In traditional approaches high-performance computing consists dedicated servers that are used to data storage and data replication. Therefore to solve the problems of Disparateness among the jobs and resources a “Disparateness-Aware Scheduling algorithm” is proposed in the cluster environment. In this research work we represent K-centroids clustering in big data mechanism for Hadoop cluster. This approach is mainly focused on the energy consumption in The Hadoop cluster, which helps to increase the system reliability. The Hadoop cluster consists of resources which are categorized for minimizing the scheduling delay in the Hadoop cluster using the K-Centroids clustering algorithm. A novel provisioning mechanism is introduced along with the consideration of load, energy, and network time. By integrating these three parameters, the optimized fitness function is employed for Particle Swarm Optimization (PSO) to select the computing node. Failure may occur after completion of the successful execution in the network. To improve the fault tolerance service, the migration of the cluster is focused on the particular failure node. This can recomputed the node by PSO and the corresponding optimal node is predicted. The experimental results exhibit better scheduling length, scheduling delay, speed up, failure ratio, energy consumption than the existing systems.

**Keywords:** K-Centroids Clustering, Big data, Hadoop Cluster, data access locality, data replication, system reliability, particle swarm optimization

# Text Mining With Lucene And Hadoop: Document Clustering With Updated Rules Of NMF Non-Negative Matrix Factorization

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**Abstract**— The enormous amount of Big Data brought into new era with innovative retrieval of information through analysis. Problem Defined: Massive amounts of data are being collected, stored and Analyzed. mostly the data that exists in documents are unstructured data like text information, log survey results, emails so on. all the data that is dumped on the platform needs systematic arrangement or ordering for robust retrieval and analysis of information. Problem Statement: Proper alignment of document files is to be labelled. when large number of files increases characterizing the files are needed. therefore, here comes the clustering of data i.e., Document clustering. it groups the instances that are unlabeled. Existing system : unstructured text is easily processed and perceived, but is significantly harder for machines to understand. a model is prepared by deducing structures going through Systematic reduce of redundancy to organize the data by similarity. Updated rules of NMF raise a self interest in document clustering. When comparing with the two already existing algorithms i.e, Single value decomposition and Latent semantic Indexing these rules gave trust in its overall performances. Proposed System: In addition to NMF rules a K-means factor is added to give prominent clustering with extracted features. to achieve this in an elaborate sequential steps we have Indexing of Documents, Stop words Removal, Stemming is used to reduce the words to the root that uses most adequate algorithms. In particular for the extraction of features , the text document words need to be identified , algorithm that is used for Key feature extraction and text notation is Natural Language Processing. In this project, the work is distributed parallelly among all the documents and that needs running NLP performs parallel pattern. Here the system uses Apache Hadoop Map Reduce for parallel programming.

**Keywords**— Text mining; Pre-processing; Natural Language process; Document clustering; Map reduce.

## I. INTRODUCTION

Today it has turned into an approach to transmit interactive multimedia information by means of the all-pervasive Internet. By means of the imminent electronic trade, it has ended up amazingly vital to handle the delicate issue of bearing information security, particularly in the perpetually zooming open system upbringing of the present day generation[22-24]. Improvement of technology has supported the growth of huge amounts in text documents existed on the internet, organizations, advancement databases, companies so on. the different structure types of information can be unstructured , semi-structured documents. grouping of these unstructured information from the documents is a typical problem for retrieving of the Information. Figure 1 showing the process of text mining.

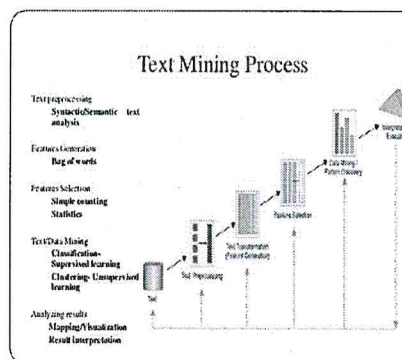


Fig. 1. Text Mining Process



## Correlating NoSQL Databases With a Relational Database: Performance and Space

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**Abstract**— Because of the unstructured way of present day digital data, NoSQL storages have been received by a few endeavors as the favored storage office. NoSQL storages can store schema-oriented, semi-structured, schema-less data. A kind of NoSQL storage is the document-append storage which has gotten high selection because of its adaptability to store JSON-based data and files as connection. The consistent data development in current associations has made a requirement for adjustment and advancement in the field of information stockpiling. Optimal improvements, for instance, NoSQL have been proclaimed because the answer for the regularly constructing informationrequisites of the company world, nonetheless these cases have now not been subsidized by way of countless certifiable reports. Current benchmarks assess database execution by executing particular inquiries over generally manufactured information. These simulated situations, then, keep us from effortlessly making inferences for this present reality and suitably describe the execution of databases in a genuine framework. To counter this, we utilized a genuine undertaking framework with genuine corporate data to assess the execution and space qualities of well-known NoSQL databases and contrast them with SQL partners. We show one of the primary compose substantial assessments utilizing endeavor programming and huge data. We tried Cassandra, MongoDB, HBase and MS-SQL Server, contrasting their execution and aggregate utilized space while taking care of requesting and huge compose demands from a genuine organization with an electrical estimation undertaking framework.

**Keywords**— NoSQL; Big Data; Enterprise; Write-Heavy; MongoDB; Hbase; Cassandra; SQL Server;

### I. INTRODUCTION

Huge information area has just lately taken extra prominence within the enterprise, with very excessive amounts of skills looking consistent, rapid, and continuously readily available processing (Chen et al., 2014) [1]. Ordinary relational programs are identified for his or her ACID (Atomicity, Consistency, Isolation, durability) properties and consistency ensures, nevertheless this design alternative could often under their availability and scalability(Leavitt, 2014)[2]. To counter this state of affairs, NoSQL applications has been developed. They sacrifice one of the ACID houses, especially consistency, favoring availability(Moniruzzaman et al., 2013) [3], resulting in BASE (real readily available smooth-state choices with Eventual-consistency) applications. Certainly these have methods are naturally on hand, have a soft state in the course of which consistency just isn't but exact, nevertheless then are eventually commonplace(Brewer,2000)[4]. Buying and selling off consistency for availability has resulted in tons of I-of-a-sort NoSQL approaches which have evaluated a couple of occasions in up to the moment years, but there appears to be a lack of precise world experiences with corporation talents or systems (Lourenco et al., 2015, August) [6].as an alternative, the NoSQL literature is more commonly situated on synthetic benchmarks such because Yahoo! Cloud Serving Benchmark (YCSB) (Cooper et al., 2010) [7].

We were given a specific institution system with a write-heavy workload and big datasets, and requested to evaluate the

# Generation of dynamic energy management using data mining techniques basing on big data analytics issues in smart grids

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## Abstract

The Optimal bidirectional flow of the electric power and the communicational data between suppliers and consumers are greatly enabled by the Smart Electricity in Grid. Reliable and Feasible micro energy generated due to Dynamic Energy Management (DEM) and the electricity market by consumers and suppliers. The smart grid features ICCM, aims to bring out the power at reduced cost. Powerful and practical DEM relies on load and sustainable production. Smart meters attain the huge data quantity through practical methods and solutions in this real world working. Smart Grids are enhanced by the operations such as data analytics, giving out high performance estimation, Adequate data network management and cloud computing. This paper aims focus the issues in big data and challenges experienced by the Dynamic Energy Management signed in Smart Grid. A detail explanation of data processing techniques that are mostly implemented and It also provides a brief description of the most commonly used data processing methods and recommended proposes a upcoming future directional research in the field.

**Keywords:** Big Data Issues; Smart Grids; Dynamic Energy Management; Performance; Load Classification; Distributed Systems.

## 1. Introduction

The Power applicability and digital intelligence to the power system network through the help of smart grids Smart grid is achieved by its smart metering techniques, controlled systems, digital enhanced systems with automatic tools to monitor and flow control of two way energy during the process of plugging the power. Smart grids sometimes mentioned for its decentralized electric power systems and Energy Internet to a standard protocol internet Network [3]. For the reduce of risking factors and natural disasters smart grids uses a discrete distributed plants rather than high producing plants. Smart grids are also known for its self- healing network, isolating particular line and improving the power supply which is achieved by using intelligent switches reflecting the transformer windings for digital very quick protection [21]. Advanced sensing, computing and hardware connections helps the Smart grid for delivery of addressing powers.

### 1.1. Renewable energy power distribution using smart grids with compatibility

Renewable energy attempts to plug DRES and ability to interface the local generation in radial networks demanding for Smart electricity. [38]. Managing of distributed operations with voltage regulating more penetrations DRES into generation system [41]. Smart grids are responsive, controls load frequency to enhance reliability in Grid. Integration of small Scale Renewable Energy Sources (RES) issues like voltage variations, harmonic misuse and needs

simultaneous grid [42]. Smart grid prevents the interruption services that come across the consumers to maintain energy usage and enables various choices to transmit, storage distribution and creation.

The most used renewable technologies with respect to energy storage along with increasing resources. With the use of electric smart grid energy driven to electric cars, vehicles demands peak load Smart [50].

### 1.2. Renewable energy sources using smart grids with integration

Present day Sustainable energy systems contain integration of generating electricity directly through sunlight i.e. photovoltaic (PV), gas produced in absence of oxygen i.e. Biogas generators (BG), supplement of Solar power in areas basing on wind i.e. Wind Generators (WG), various technologies generating electricity i.e. Distributed Generators, storing of wide amount of equipment i.e. multiple storage systems and controlling of workload i.e. control methodology for the load scheduling. Gupta et al., [51] proposed a integration system of RES and also storage system for the formation of hybrid energy system (HES) using various distributed generators to load power processing.



## Handling of Big Data with a Novel Solution Architecture on Smart Grids

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**Abstract**— Information and communication technologies have an important role with respect to many researches to improve the existing electrical grid. With the outgrowth of the Internet of Things and the growing availability of connected devices such as smart meters and many other sensors devices, there is huge amount of data about energy consumption, energy production etc. In this context smart grid data management and analytics using big data tools help to manage the large amount of collected data which are collected through smart devices installed in the grid in order to extract knowledge, define key performance indicators, forecast demand response behaviour etc. This paper focus to present a solution for managing big data for smart grid, so that to make it available for high level applications. In this paper we propose a global solution architecture with details of each component and its data flow using big data process.

**Keywords**— Big Data; Data Management; Grid; Architecture; Smart Devices;

### I. INTRODUCTION

Smart grid is of the automation system which is established by integrating large pool of sensors, smart meters, in the existing power grids system in order to control and monitor the information and communication technologies [1].

All the smart devices produce variety and heterogeneous types of data such as weather data, consumption data, energy data etc. This explosion in data reflects the fact that a smart

grid involves not just more detailed meter information, but a wide range of smart devices and data types that should be well managed to take advantage from the smart grid; better understand customer behaviour, detect outages, fraud or theft and more accurately forecast energy demand. It needs the establishment of complex treatments [2] because of the following:

- The nature of the data such as time series, stream data
- Their distributed nature and need for treatment at different scales, since it comes from different sources.
- Real time analytics for certain needs.

The data management outcomes can be optimized in two ways. First it should extract clean, consistent and information that drives targeted advantages for the business. And second having identified those advantages, it should minimize the costs of infrastructure needed to obtain and process the necessary data to deliver these benefits.

This paper mainly focuses on IT solutions in the domain of smart grid data management and analytics using big data tools. The second gives related works with respect to ACCENTURE, EDF Solution and ITRON-TERADATA. Third section of the paper presents the proposed solution as a function architecture that explains the flow of data from collection phase to higher level where data management and data analytics are executed in order to make decisions, in order to produce reports and



# Applying compression algorithms on hadoop cluster implementing through apache tez and hadoop mapreduce

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## Abstract

The latest and famous subject all over the cloud research area is Big Data; its main appearances are volume, velocity and variety. The characteristics are difficult to manage through traditional software and their various available methodologies. To manage the data which is occurring from various domains of big data are handled through Hadoop, which is open framework software which is mainly developed to provide solutions. Handling of big data analytics is done through Hadoop Map Reduce framework and it is the key engine of hadoop cluster and it is extensively used in these days. It uses batch processing system. Apache developed an engine named "Tez", which supports interactive query system and it won't writes any temporary data into the Hadoop Distributed File System(HDFS).The paper mainly focuses on performance juxtaposition of MapReduce and TeZ, performance of these two engines are examined through the compression of input files and map output files. To compare two engines we used Bzip compression algorithm for the input files and snappy for the map out files. Word Count and Terasort gauge are used on our experiments. For the Word Count gauge, the results shown that Tez engine has better execution time than Hadoop MapReduce engine for the both compressed and non-compressed data. It has reduced the execution time nearly 39% comparing to the execution time of the Hadoop MapReduce engine. Correspondingly for the terasort gauge, the Tez engine has higher execution time than Hadoop MapReduce engine.

**Keywords:** Data; Mapreduce; Compression; Tez; Hadoop.

## 1. Introduction

Hadoop is the more performance technologies used for the big data on present researches. It can be implemented on single or multi cluster. For example big data in a real world, social information's are used to predict and match personal's life style between people in Face book. For the large data sets business intelligent is the term used between social medial information and business information which are generally complex to analyze and predict the dynamic trend of customers need with their products. Hadoop is the solution for all big data problems. Its eco-components includes HBase, Hive R connectors, Mahout, Pig and OOZIE. They work on Hadoop distributed File system and MapReduce. HDFS is a logical disk over physical directories in each data node of Hadoop cluster. It communicates with TCP protocol port 22 such as secure shell on every node in the cluster. HDFS disk is a high fault-tolerant with various replicas in HDFS configuration, only YARN can access and process it. The replication number is a direct effect to HDFS storage. Cloudera and Hortonworks are the two major organizations which are providing a hadoop platform. They perform a data compression algorithm with hadoop, which can decrease disk storage and bandwidth network between each node on the cluster. A hadoop compression suite is including DEFLATE,GZIP,BZIP,LZ4 and Snappy. Yarn has two frameworks which can process data using the map reduce and Tez framework. MapReduce framework supports batch processing and it is a default framework of the hadoop cluster. on the other side, Tez supports interactive processing. It is complex

to install and configure with the binary files from the Apache Tex website [1].Rupinder Singh's research [2] invested Tez framework with the Pig scripts and researchers purpose this framework which is better for pre structure data than MapReduce.

The paper mainly focuses on the performance evaluation of compression methods which are available for the hadoop cluster. We study to evaluate a comparison with those of frameworks map reduce and Tez. Tez can reduce the process of data stored in HDFS, it is significance for the research hypothesis. The results of this paper shows the execution time from Hadoop's benchmark and the best methods to implement compression in Hadoopcluster with the big data. We propose an alternative method for improving execution time which is the performance indicator of the Hadoopcluster.

## 2. Related work

Hadoop is the most popular issue in the high performance computing and big data now a days. In Rupindersingh's research, he focused on the performance comparison of Hadoop's framework MapReduce and Tex with pig scripts which are pre structure data. The results of his research shows that Tez has better performance than MapReduce. In the Hadoop compression algorithms, Andre Wenas [2] used compression as follow: GZIP, LZJB and ZLE for data warehouse and his results shows the best performance on ZLE. Yanpei Chen's research[4] tried to select compress or not compress map reduce output file for reducing power consumption. His results shows that it decreases energy consumption more than 50%.Bhavin



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## DETECTION AND FIRE CEASING USING ROBO AUTOMATION

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### Abstract

A Robot is a **multifunctional manipulator** designed for performing a variety of tasks. Automation plays a vital role in today's world and robots are good example of it. In Industries and houses, fire and leakage of combustible gases will result in hazardous accidents. Fire emanating from various sources potentially endangers human life and loss of property. To overcome these issues our project is related to a fire ceasing robot that works automatically by examining the aspects of specification and design. The robot detects the fire using a flame sensor thereby sending signals to the microcontroller which in turn actuates the motion of robot. The robot finds the obstacle free path with the help of Ultrasonic sensor mounted on a Servo motor. Once reaching the destination the robot starts extinguishing the fire and sends a message to the operator after the process of extinguishing the fire. The robot is autonomous as well as controlled by a RF remote control, which will be handled by the operator. Wireless camera is included in order to get live audio and video feed to the operator. Thereby in the case of manual control mode, the operator actuates the motion of robot with the help of wireless camera feed

**Keywords:** Global System for Mobile Communication (GSM); Liquid Crystal Display (LCD); Radio Frequency (RF); Receiver (RX); Transmitter (TX); Transistor Transistor Logic (TTL). Light Dependent Resistor (LDR); Integrated Development Unit (IDE); Proportional Integral Derivative (PID); Virtual System Modelling (VSM)

### INTRODUCTION

Robots are mostly built for security purposes, that is in some cases humans cannot directly head to the dangerous places because even a small mistake can cost the life of a human. So in those conditions the robots can be controller are guided to inaccessible locations with ease. One main application of robot is security purpose. Some robots are designed and constructed for spying, military purpose, security etc. One major application where robots are very

useful are in the fire extinguishing field. The major drawback in fire fighting is the fire ranger cannot directly head to some spots to extinguish the fire, in such cases the robot can help the ranger to navigate to the spot and even it can try to extinguish the fire. Fire is the rapid oxidation of a material in the exothermic chemical process of combustion, releasing heat and various other reactions. Fires starts when a inflammable or a combustible material in combination with a sufficient quantity of an oxidizer such as oxygen gas or any other compound is exposed to heat or ambient temperature above the flash point for the fuel mix and is able to sustain a rate of oxidation that produces a chain reaction this is commonly called fire tetrahedron or fire triangle. There must be oxygen to sustain combustion, heat to raise the material to its ignition temperature, **fuel** to support the combustion and a chemical reaction between the other three elements. Removing any one of these four elements will extinguish the fire. The concept of Fire Protection is based upon keeping these four elements separate.

### ARDUINO MEGA 2560

The Mega 2560 is a microcontroller board based on the ATmega2560. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started. The Arduino Mega can be powered via the USB connection or with an external power supply. External (non-USB) power can come either from an AC-to-DC adapter (wall-wart) or battery. The Arduino consists of digital pins, analog pins, and communications pins. The digital pins are allotted or connected with the LCD which displays the operations performed by the code. The motors and flame sensors are connected to the analog pins which require analog data's. the communications device GSM is connected in the communication port and it is used to send message regarding the fire to the operator and fire department. The overall coding is done for the prevention and ease of work for the fire fighters.

## Studies on the TMS Using IR Sensors for Avoiding Congestion in Traffic on Indian City Roads

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### Abstract

In the current research article, a comprehensive presentation of the developed transport monitoring system was explained. The present monitoring system was developed and implemented with the help of count sensors, microcontroller and other units necessary to advise the drivers whoever using the busy roads. The current system works by processing the data that was being collected from the sensors that were placed in the ground of the roads. The main goal of developing this traffic monitoring system was to collect the movement of vehicles that were moving on a selected busy roads over a period of time and suggest the drivers to take other available routes in the city such that to reduce the congestion on the city roads. Based on the number of vehicles that were being travelling towards the road by crossing the sensor units were calculated and the suggestion was given to drivers whoever using such roads in terms of heavy traffic, moderate traffic and light traffic to the drivers. The data from the sensors will be collected by a system that was placed at the side of the road and the monitoring system will process the data and three available appropriate decisions will be given to the traffic signal that were placed at the various signal points before to the actual busiest signal point. Based on the traffic signal lights of the monitoring system, the drivers can take the decision of diverting the vehicle to other possible routes such that the congestion in heavy traffic roads can be avoided such that the time travelling time of the passengers can be reduced. The present system was deployed on the selected roads and collected the results at various timeslots and the signals were being tested with various set of results that were evolved with various time slots. The results were tabulated in the results section and the future scope of the traffic monitoring system was also discussed in the conclusion section.

**Keywords:** Traffic Monitoring, IR Sensors, 8051 Microcontroller, Congestion avoidance in traffic

### 1. Introduction

Management of traffic issues in the real world environment are the latest research issues in the world. Several applications were being developed in the developing countries to make the traffic simple and make the passengers easy and comfort in the city for driving of vehicles [1, 2]. Traffic monitoring systems will help a lot in administration of the traffic at various levels and also to avoid the traffic problems to the drivers who were travelling in the heavy traffic roads with huge traffic [4, 5]. By using this type of monitoring systems, the transportation in the cities can be managed in terms of smarter

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Received (November 5, 2017), Review Result (January 8, 2018), Accepted (January 17, 2018)

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## Security Issues and Routing Challenges On Mobile Ad-Hoc Networks: An Extensive Review

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### Abstract

*In this paper, we present challenges and review of security issues for remote systems. Mobile Ad-hoc networks are those networks whose architecture and the mode of the connections were not fixed. The architecture and the mode of the connections of the network will change from time to time. As a result, several security issues and the performance of the routing protocols which we want to implement in these networks may not be stable always. Hence, providing security to the data in these networks may not be secure and safe completely, and various challenges will encounter while we were working on these networks. Hence, a brief note on the various set of security issues, security challenges and the various list of problems will occur during the utilization of these routing protocols was present in the current paper.*

**Keywords:** Routing Protocols, Network security, security issues, Ad-hoc Network, safety repair, Wireless Network, Routing Authentication

### 1. Introduction

Remote sensor systems include of small center with detecting, calculation and remote interchanging capacities. Specially appointed systems are another worldview of foreign correspondence for portable hosts which causes visit changes in topology [1, 2]. Specially appointed systems are self-configurable and self-governing frameworks comprising of switches which can bolster movability and arrange themselves discretionarily. Without help from the settled framework, it is difficult for individuals to recognize the insider and untouchable of the remote system [3,4]. In other words, it is difficult for us to distinguish the legitimate and the illicit members in remote frameworks. Due to the previously mentioned properties, the execution of the security has turned into a basic test when we outline a remote system framework. The hubs of impromptu systems are portable and with remote correspondence to keep up the availability, it is known as versatile specially appointed system (MANET). Also, it requires an exceedingly adaptable innovation for building up interchanges in circumstances which request a completely decentralized system with no settled base stations like war zones, military applications and other crisis circumstances [5].

In MANETs, every hub in the network imparts over remote connections with no settled foundation. MANETs are appropriate to situations in which there is no settled framework or when the foundation is not trusted. In such systems, a typical methodology is to shape bunches where every hub is connected to a group set out toward proficient steering with different hubs that are not in its next range [6]. GAs has been utilized as a part of such bunch based steering plans for MANETs. Al Gazal et. al., [4] have proposed a GA-based convention named 'group portal switch steering convention' (CGSRP) to choose the bunch

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Received (August 12, 2018), Review Result (October 1, 2018), Accepted (October 15, 2018)

## Black Hole Attacks on WSNs Using Discrete Simulator: An Extensive Review

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### Abstract

Wireless sensor networks are becoming famous day to day due to the enormous applications and uses that these network models are providing. As the networks utilization was growing in a rapid manner day to day the attacks on these networks also gaining in a considerable manner. In the current paper, the effect of the presence of black holes in the network and their influence on the performance of the network was given thought and the implementation of such models are simulated by using NS2 simulator and the results are displayed in the results section.

**Keywords:** Wireless sensor networks, black hole attacks, NS 2 Simulator

### 1. Introduction to WSN

A Wireless Sensor Networks are made and developed with various types and different sensors that can be used and applied to monitor, observe and measure the various physical and ecological conditions like temperature with range of high temperature or the low temperature, humidity, pressure etc [1]. The architecture model of a wireless sensor network was observed in the following figures in the below section. The Wireless Sensor Networks are developed by using several numbers in hundreds and thousands of finding stations known them as nodes at which each node in the network connected with other sensors. The architecture of a Wireless Sensor Networks consists of a radio transceiver which works as both as an transmitter and receiver, an antenna that can be utilized as both for internal and external applications for tracking the signals from various levels of signal and various strengths, a microcontroller unit for processing the data that was being collected from various sensors and their related units and also consists of a battery unit for

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Received (September 9, 2018), Review Result (November 8, 2018), Accepted (December 6, 2018)

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## Security Issues and Attacks in Wireless Sensor Networks: Some Case Studies

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### Abstract

Remote sensor arranges is a standout amongst the most developing innovation for detecting and playing out the distinctive undertakings. Such systems are valuable in numerous fields, for example, crises, wellbeing observing, ecological control, military, ventures and these systems inclined to malignant clients' and physical assaults because of radio scope of system, un-put stock in transmission, unattended nature and get to effectively. Security is a crucial necessity for these systems. In this paper, our focal point of consideration is on physical assaults and issues in remote sensor systems. Through this audit, effectively distinguish the reason and abilities of the aggressors. Further, we talk about understood methodologies of security discovery against physical assaults.

**Key words:** Physical attacks, Wireless sensor network, Security

### 1. Introduction

The security of system is a major issue for security executives since organize is developing step by step. Security on the Internet and on Local Area Networks is currently at the bleeding edge of PC organize related issues [1]. The alluring highlights of systems, for example, open medium, dynamic topology, nonattendance of focal experts, and disseminated participation hold the guarantee of altering the specially appointed systems over a scope of common, logical, military and modern applications. Nonetheless, these attributes make MANET systems powerless against various sorts of assaults and make executing security in specially appointed system a testing assignment. The fundamental security issues that should be managed in MANET systems include: verified gadgets, the protected directing in multi-bounce systems, and the safe exchange of information. This implies the collector ought to have the capacity to affirm that the personality of the source or the sender (*i.e.*, one bounce past hub) is for sure who or what it cases to be. It likewise implies that the collector ought to have the capacity to check that the substance of a message has not been changed either malignantly or incidentally in travel.

Remote Manet is another foundation less correspondence innovation which is comprises of those conditions where administration of framework costs high. Aside from this legitimacy it has bad marks as far as secure correspondence. Manet is characterized by its highlights like self sorting out, circulated application and multi hub steering. Because of its dynamic nature keeping up the secured correspondence is monotonous when brought together administration does not exist. In such condition key administration plans is a troublesome assignment to accomplish a protected correspondence. Utilizing overseeing of secure key dissemination for security speed fluctuates with respect to the

Received (January 5, 2018), Review Result (April 16, 2018), Accepted (April 21, 2018)

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## Security and Assurance Aspects to be Observed in Cloud Computing Based Data Centers: A Study

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### Abstract

Disseminated registering shift the submission programming and information places to the gigantic server ranches, where the organization of the data and organizations may not be totally tried and true. With the nearness of the web and the improvement of electronic business entries and relational relations, affiliation done the biosphere marks a generous measure of insights arrange by organize. Additionally coordinate security issues are at the present time persuading the chance to be essential as civilization is touching towards modernized data age. It fuses underwriting of access to data in a structure, measured by the scheme chief. This article discussion around the cutting edge for a wide degree of cryptographic considers that are exploited by a bit of systems association submissions. This positions various novel safety confront which contain totally realized. In this paper, we generally spotlight on perspectives for offering safety to information accumulating in dim, furthermore building for information amassing that are realized by additional expert centers dealers in dim, key concentrations for showing safety for further information storing.

**Keywords:** security techniques, space issues for security, architecture, cloud computing, firewalls

### 1. Introduction

The inspiration for organizations to consider distributed computing lies in the always developing difficulties that go with the developing progression of the market and the ever fiercer aggressive field [8, 14]. The utilization of figure concentrated data innovation (IT) is in the mean time a crucial piece of business activities, to empower business procedures to be better focused on and new business arrangements provisioned with more noteworthy adaptability and speed. The opposite side of this coin is the high expenses for obtaining, working, and keeping up the IT. These costs just once in a while legitimize finish scope of the most extreme expected programming and asset prerequisite, for instance stockpiling and figuring limit. Notwithstanding enhancing productivity and speed, endeavors in this manner likewise need to acknowledge cost reserve funds and advance the IT security of their framework in the event that they need to remain focused [16]. Distributed computing can be the following stage toward enhancing IT administrations and improving utilization of existing limits.

The idea that structures the reason for distributed computing portrays different conceivable methodologies to ensure its dynamic organization assets, for example, stockpiling limit or processing power and additionally inner undertaking administrations or administrations crosswise over organization limits. Distributed computing frameworks permit foundation assets and application administrations to be obtained on request as an

Received (January 21, 2018), Review Result (April 15, 2018), Accepted (April 21, 2018)

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## A Detailed Review on Mobile Ad Hoc Networks: Protocols, Security Issues and Challenges

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### Abstract

*In this article, an overview of secure specially appointed steering conventions for remote systems was presented. Impromptu system is a gathering of hubs that is associated through a remote medium framing quickly evolving topologies. Assaults on specially appointed system steering conventions disturb organize execution and unwavering quality with their arrangement. We quickly exhibit the most well-known conventions that take after the table-driven and the source-started on-request approaches. The associationflanked by the proposed arrangements and parameters of specially appointed system demonstrates the execution as indicated by secure conventions. We talk about in this paper directing convention and challenges and furthermore examine verification in specially appointed system.*

**Keywords:** *Routing Protocols, Network security, security issues, Ad hoc Network, safetyrepair, Wireless Network, Routing Authentication*

### 1. Introduction

Wireless networks [4] comprise of various hubs which speak with each other over a remote station which have different kinds of systems: sensor arrange, specially appointed versatile systems, cell systems and satellite systems. Remote sensor systems include of smallcenter with detecting, calculation and remote interchanges capacities. Specially appointed systems are another worldview of remote correspondence for portable hosts where hub versatility causes visit changes in topology. Specially appointed systems are self-configurable and self-governing frameworks comprising of switches and has, which can bolster movability and arrange themselves discretionarily. This implies the topology of the impromptu system changes progressively and unusually. In addition, the impromptu system can be either developed or destructed rapidly and self-rulingly with no managerial server or framework. Without help from the settled framework, it is without a doubt exhausting for individuals to recognize the insider and untouchable of the remote system. In other words, it is difficult for us to distinguish the legitimate and the illicit members in remote frameworks. Due to the previously mentioned properties, the execution of security foundation has turned into a basic test when we outline a remote system framework. On the off chance that the hubs of

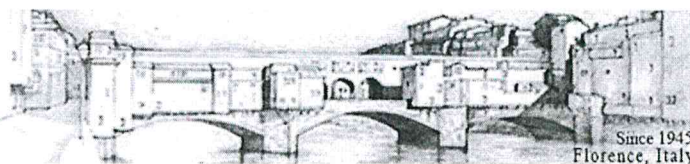
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Received (November 23, 2017), Review Result (February 28, 2018), Accepted (March 6, 2018)

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**CONTROLLING AND MONITORING HOME APPLIANCES THROUGH CLOUD USING IoT**

Author(s): Saranya Vanama, PACHIPALA YELLAMMA, A RAMYA, G.V KALYANI, CHALLA NARASIMHAM

J. Ponte - Feb 2018 - Volume 74 - Issue 2

doi: 10.21506/j.ponte.2018.2.8

**Abstract:**

The Internet of Things (IoT) has rapid improvements in wireless technology. Many of the budding domain applications have been expanded as Automation and analysis. The schema proposes a methodical application for Internet of Things used for controlling and monitoring the heterogeneous home appliances through cloud. The primary objective of our proposed work is to design and implement a Home Automation (HA) System using integration of cloud networking, wireless communication and sensors. It is competent to automating and controlling of various appliances within the house and keeps the information in the cloud through Smartphone. It has significant flexibility with WiFi technology to be linked with its circulated sensors to HA cloud system. In this scheme reduce the utilization cost and increase the facility of enhancing heterogeneous appliances and scheme reconfiguration.

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# A SECURE FRAMEWORK FOR AUTHENTICATION OF DOCUMENTS IN CLOUD

Author Name(s): Mr.Srikanth Ganta, Dr Jayaram Pradhan, Dr Narasimham Challa

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## Abstract

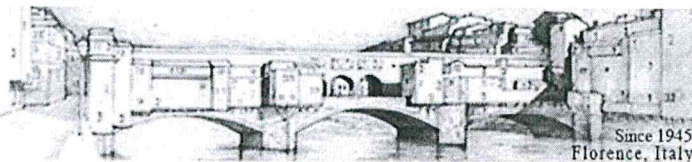
Web has become a prominent storage option of late. But there are certain setbacks in the present web which has a shortfall of appropriate mechanism to create and store artifacts — code, data sets text, image-in digital form which are needed to be unchangeable in any way and be verifiable and permanent. These issues hamper the reliability on the cloud for its functional productivity especially in the domain of science where the re-productivity of outcome process is highly vital. In order to overcome the setbacks, it is proposed a methodology with the stored data processing of encoding and decoding at cloud environment taking the support of cryptographic hash values. In this paper it is presented that how the model work out in verifying the digital artifacts with the help of the format of independent serialization for structured files like nano-publications. It is explained how the documents can be processed using cloud computing environment where the application is integrated with Hadoop installed on Amazon EC2 web service. The approach presented in this work confines to fundamental salient features in the aspect of architecture which is open and decentralized besides completely compatible with prevailing protocols and standards. On its evaluation of approach for its referential implementation exhibits the accomplishment of the design goals indeed stands good practically for the files even larger in size.

## Keywords

Hadoop, Map Reduce, Big data, cloud computing

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## FORECASTING LABELLED AND UNLABELLED TIME SERIES DATA THROUGH HISTOGRAM BASED KNN PREDICTION

Author(s): Kumar V., Narasimham C.

J. Ponte - Jan 2018 - Volume 74 - Issue 1  
doi: 10.21506/j.ponte.2018.1.35

### Abstract:

Forecasting through Classification of time series data is a major research areas in Computer Science, Economics and many other areas. A lot of literature is available on forecasting time series data through time series analysis using statistical and mathematical methods like ARIMA, spectral analysis, fuzzy sets. Another alternative for time series forecasting through data mining technique is time series classification, which has less contribution to the literature available. There are also separate methods for predicting class labels of categorical time series data and predicting values of continuous time series data. In this work, we proposed a new method called forecasting labelled and unlabeled time series data through histogram classification using Adaptive Cost Dynamic Time Warping and Euclidean Distance. Which is a common method for predicting class labels of labelled time series data and predicting values of an unlabeled time series data. We applied this method to forecast Taiwan stock indexing, which is a continuous time series data and applied to labelled time series data called BeetleFly dataset and BirdChicken dataset to predict its class labels. The accuracy of forecasting and prediction of class labels compared with existing methods. The results showed that this method has a better performance compared to existing ones.

**Keywords:** Forecasting, Histogram-classification, Labelleddata, Unlabelled data, K nearest neighbors.

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# A Novel Feature Selection based Classification Model for Disease Severity Prediction on Alzheimer's Database

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**Abstract---** In the current era, research on automatic image classification on high dimensional medical disease databases is growing rapidly. Since most of the Alzheimer's disease databases have heterogeneous features with different levels of severity patterns. Detection and classification of high risk patterns has many potential benefits for decision making. Traditional image classification models such as Naïve Bayesian, Neural Networks, SVM, Regression models, etc are used to classify the image using the annotated ROI and image texture features. As the size of the Alzheimer's disease patterns and its categories are increasing, traditional data classification models are failed to process the disease patterns due to class imbalance, inconsistent, and sparsity issues, which may affect the disease prediction rate and error rate. Unlike the existing solutions, which require a prior knowledge of classification parameters for various types of image features, which is not possible to obtain in practice. Also, as the size of the training images increases, it becomes difficult to find the relevant features using the image features and ROI values. In this proposed model, a novel filtered based automatic Alzheimer's disease classification model is proposed to improve the disease prediction rate and to minimize the error rate of the classification model. Experimental results show that the proposed model has high prediction rate compared to the traditional models in terms of true positive rate and error rate are concerned.

## I. Introduction

Abnormal behavior and loss of memory could indicate a brain disorder that is neurodegenerative, known as Alzheimer's disease. In other words, Older people suffer from some form of dementia which could lead to neuronal loss known as Alzheimer's disease (AD). Neuropsychological examination and psychometric assessment mainly determine the clinical evaluation. The confusing factor of cognitive research may, however, hide the early signs of Alzheimer's disease. Successful diagnosis of the disease can be achieved through using structural MRI to detect the brain's anatomical changes that are brought about by the disease. The advantage of using automation for AD detection lies in the improved accuracy and the increased speed of the process of treatment. Structural neuroimaging can provide good markers for the detection of diseases such as AD because of their sensitivity to degeneration. AD detectors fall into three typical types. The types which base on cortical thickness are the most used ones. Querbes and colleagues produced an 85% accuracy of distinction of normal aging healthy controls from patients with Alzheimer's disease. The second class of popular structural measurements is those who consider the volumes of certain structures, for example, the hippocampus. An example of a technique which reduces dimensions efficiently is Principal component analysis. It removes the repetitive elements from the data and does not alter a large part of the useful information, hence resulting in data compression. The technique converts the original feature data to an ordered, and uncorrelated variable set called the Principal Components (PCs) so that the first few PCs contain most of the original variables' variations. PCA can greatly reduce the brain image data's dimension. Support vector machine has, however, produced better results in the categorization of clinical diseases. It is a supervised learning model that allows high dimensional data to be trained and classified [1][2]. Some studies prove the SVM's high accuracy of AD classification using high-dimensional data set.

Machine learning models are used to classify different medical datasets such as microarray data, clinical data, and proteomic data as input. Most of the traditional approaches consider the features as independent and linear. Most of the biological systems are non-linear and its parameters are interdependent, thus machine learning has become better choice. Both machine learning and conventional methods suffer from high dimensionality problem. This problem can be resolved by either decreasing the number of variables or increasing the number of training



## Sentiment Analysis Review on Twitter Data in Hadoop Environment

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### Abstract

Twitter is an online long range informal communication website that includes wealthy measure of information that can be organized, semi-organized and un-organized information. In the current article, several strategies were discussed which carries out order of tweet opinion in Twitter is talked about. To enhance its adaptability and productivity, it is proposed to actualize the work on Hadoop environment, a broadly received circulated handling stage utilizing the Map Reduce parallel preparing worldview was discussed in detail. At long last, broad examinations will be led on certifiable informational indexes, with a desire to accomplish tantamount or more prominent precision than the proposed systems in writing. The detailed review on the various methods and their advantages and disadvantages were discussed in the current article in detail for the researchers and students who like work on the analysis of the data of the twitter to be analyzed by using the sentiment analysis model.

**Keywords:** sentiment analysis, twitter, data, Hadoop environment, map reduce, HDFS.

### 1. Introduction

We exist within a general public where the printed information available on the Internet is developing at a quick pace and many organizations are attempting to utilize this downpour of information to separate individuals' perspectives towards their items. Online interpersonal organization stages, with their vast scale archives of client created content, can give one of kind chances to pick up bits of knowledge into the passionate "beat of the country", and in reality the worldwide group. An extraordinary wellspring of unstructured substance information is fused into relational associations, where it is unfeasible to physically dismember such measures of data. There are a sweeping number of casual association's locales that enable customers to contribute, change and grade the substance, and notwithstanding express their earnest convictions about specific focuses.

Received: Jul. 10, 2018

Revised: Jul. 17, 2018

Accepted: Jul. 20, 2018





# INDERSCIENCE PUBLISHERS

Linking academia, business and industry through research

[International Journal of Inventory Research](#) > [2018 Vol.5 No.2](#)

## Title: Perishable inventory model with Markovian arrival process, retrial demands and multiple working vacations

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**Abstract:** In this paper, we consider a continuous review perishable inventory system in which two types of customers, positive and negative, arrive according to a Markovian arrival process. The life time of an item and the lead time of reorder are exponentially distributed. Demands that occur during stock out period or busy period either enter an orbit of size  $N$  or are lost. The orbital demands compete their service with an exponential rate depending on the number of demands in the orbit. The waiting demands in the orbit may renege the system after an exponentially distributed amount of time. The server takes multiple working vacations at zero inventory. The steady state joint probability distribution of the number of customers in the orbit and the inventory level is obtained. Various performance measures and cost analysis are shown with numerical results.

**Keywords:** Markovian arrival process; MAP; orbit; inventory;  $(s, S)$  policy; replenishment time; negative customers; multiple working vacations; matrix analytic method; perishable items; retrial demands.

**DOI:** [10.1504/IJIR.2018.093805](#)

International Journal of Inventory Research, 2018 Vol.5 No.2, pp.79 - 98

Received: 23 Oct 2017

Accepted: 07 Nov 2017

Published online: 06 Aug 2018

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## Security and Assurance Aspects to be Observed in Cloud Computing Based Data Centers: A Study

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### Abstract

*Disseminated registering shift the submission programming and information places to the gigantic server ranches, where the organization of the data and organizations may not be totally tried and true. With the nearness of the web and the improvement of electronic business entries and relational relations, affiliation done the biosphere marks a generous measure of insights arrange by organize. Additionally coordinate security issues are at the present time persuading the chance to be essential as civilization is touching towards modernized data age. It fuses underwriting of access to data in a structure, measured by the scheme chief. This article discussion around the cutting edge for a wide degree of cryptographic considers that are exploited by a bit of systems association submissions. This positions various novel safety confront which contain totally realized. In this paper, we generally spotlight on perspectives for offering safety to information accumulating in dim, furthermore building for information amassing that are realized by additional expert centers dealers in dim, key concentrations for showing safety for further information storing.*

**Keywords:** security techniques, space issues for security, architecture, cloud computing, firewalls

### 1. Introduction

The inspiration for organizations to consider distributed computing lies in the always developing difficulties that go with the developing progression of the market and the ever fiercer aggressive field [8, 14]. The utilization of figure concentrated data innovation (IT) is in the mean time a crucial piece of business activities, to empower business procedures to be better focused on and new business arrangements provisioned with more noteworthy adaptability and speed. The opposite side of this coin is the high expenses for obtaining, working, and keeping up the IT. These costs just once in a while legitimize finish scope of the most extreme expected programming and asset prerequisite, for instance stockpiling and figuring limit. Notwithstanding enhancing productivity and speed, endeavors in this manner likewise need to acknowledge cost reserve funds and advance the IT security of their framework in the event that they need to remain focused [16]. Distributed computing can be the following stage toward enhancing IT administrations and improving utilization of existing limits.

The idea that structures the reason for distributed computing portrays different conceivable methodologies to ensure its dynamic organization assets, for example, stockpiling limit or processing power and additionally inner undertaking administrations or administrations crosswise over organization limits. Distributed computing frameworks permit foundation assets and application administrations to be obtained on request as an

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Received (January 21, 2018), Review Result (April 15, 2018), Accepted (April 21, 2018)

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## A Concrete Weather Reporting System Model using IoT

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### Abstract

The framework projected in the current article is a propelled answer for recovering the ecological circumstances like temperature and mugginess at a precise position and create the information accessible anywhere on the world. The improvement utilized as a part of this paper is Internet of Things (IoT), is the idea of essentially interfacing any gadget with an on and off change to the Internet. Here things might be whatever like electronic contraptions, sensors and auto electronic rigging. The structure oversees watching and retrieving the common parameters like heat, comparative humidity, normal power and CO level with feeler and propel the data to the site sheet and a while later plan the feeler information as graphical experiences. The information revived from the executed model can be accessed in the web from wherever on the world.

**Keywords:** IoT System, Arduino UNO, Arduino Software, ESP8266

### 1. Introduction

The web allowed us to interface in ways we could never have envisioned possible. The Internet of Things suggests the limit of common things to connect with the Internet and to each other through little, introduced sensors and wired and remote advances. For customers, the IoT can pass on courses of action that altogether improve essentialness viability, security, prosperity, preparing and various diverse parts of consistently life. For wanders, IoT can bolster plans that upgrade fundamental administration and proficiency in collecting, retail, cultivation and distinctive parts [5]. Show progressions in growth dominantly focal point on reducing and recuperating of various activities. These rose to achieve most by far of the human needs. Whenever the sensors in the network are entering into the situation or the position, then the condition of the sensors in the network will become as contraption mode and the microcontrollers in the unit will become the programming purpose transformation into the self-securing and self-watching condition [9].

The fuss and CO levels are checked as, if any limitation observes crossing its border observe ranges, for example CO levels in air in a meticulous district outperforming the average levels et cetera, in the earth using remote introduced figuring structure is proposed in this paper. It similarly gives a keen remote checking to a specific region of interest. In this paper we also fused the grades of assembled information by means of the common place or decided extents of exacting limitations. The surrounded system is a compromise of sensor devices, remote correspondence which allow the customer to remotely get to the distinctive limitations and amass the information in cloud. The upsides of this application are that we can have the passage of the data concerning the temperature

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Received (September 19, 2017), Review Result (January 10, 2018), Accepted (January 16, 2018)

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# Improvement of position and orientation of Unmanned Aerial Vehicle (UAV) with INS/ GPS

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## Abstract

This paper deals with the methods performing state estimation .that is position and orientation of Unmanned Aerial Vehicle (UAV) using GPS, gyro, accelerometers and magnetometer sensors. Various methods are designed for position and orientation measurements of UAV. In this paper we proposed extended kalman filter based inertial navigation system using quaternions and 3D magnetometer. Initially we load UAV truth data from a file ,generate noisy UAV sensor measurements and perform UAV state estimation and display UAV state estimate results with proposed method compares with previously exited method extended kalman filter based altitude and heading reference system using quaternion and 3D magnetometer simulation .Results shows that EKF-INS method gives better position and orientation of UAV.

**Keywords:** UAV, INS, GPS, Extended Kalman Filter, Attitude and heading reference system.

## 1. Introduction

In present days UAV's have been progressively utilized for extensive variety of uses, those are aviation, agribusiness, development, looking over et cetera. How these UAV's working securely by create dependable route and control innovations for UAV's position.

Now a days, the generally utilized route advancements for UAV's are GPS beneficiaries and INS gadgets and a video framework. INS gadgets don't rely upon the outside radio estimations. It monitors its situation by precisely estimating accelerometers and spinner readings. That is the reason it works in remote territories without ground based navigational guides. At the point when contrasted with INS here and now situating precision, GPS route advancements give predictable exactness, when it tracks adequate GPS signals amid the whole UAV mission; however drawback in GPS is it doesn't give elevation estimation. That is the reason coordinated GPS/INS route framework utilized for some applications; however execution of the incorporated framework predominantly relies upon the accessibility and nature of GPS signals [1-3, 7].

## 2. Vision Aided Movement Estimation

Enormous scopes of creative and perceptive sensors are to be needed to meet the prerequisite of this remarkable programming, which gives an adaptable improvement to the coordinated device. The investigation of visual movement assessment comprises basic issues. One of them is to decide optical drift and additionally trademark corresponding from photograph successions, and the inverse is to evaluate development parameters and utilization of them. Some scientists made an evaluation at calculations for estimation of movement/shape parameters from picture groupings

inside the PC vision setting. Keeping in mind the end goal to ideally join vision component into a GPS/INS route device, the creative and insightful route execution should be examined first.

The photograph successions taken from the UAV can be utilized as a different arrangement of independent spatial estimations. Given that close contraptions flaunt a superior precise development inside the visual field than far off items, optic buoy can be utilized to ascertain the assortment to work area bound protests inside the field of view, or the bona fide pace of devices with perceived levels. In this mission, optic take the path of least resistance is ascertained on the UAV helicopter progressively at 50Hz the utilization of a photo interjection set of guidelines (Srinivasan, 1994), which is capable in common out of entryways conditions and in the state of precise rates of unmistakable development.

Two stages are required to decide interpretation speeds from the optic float determined precise expenses. Right off the bat, the impacts of turn are isolated from the ones interpretations through subtracting the recognized revolution cites, estimated with the guide of the locally available charge whirligigs, from the optic take the path of least resistance cites. Furthermore, the picture movement expense is enhanced by utilizing the range over the floor anticipated that through a LRF would evaluate the mean-centred measurement of parallel and longitudinal speeds. The vertical speed in respect to the floor can be computed by means of the span of LRF. As the majority of the sensors have measurement botches, the critical thing issue appropriate here is to model and gauge the errors and concentrate the route data from the inventive and perceptive and INS information streams[8-13].

Therefore, the frame which contains UAV horizontal speed can be calculated with the help of optical drift.

With the use of following formula LRF and gyro can be modified angularly.

$$v_{bxy} = (\delta_{xy} - \varphi_{xy}) * r_{gz} \quad (1)$$





## Hybrid Processing Technique to Gender Inference in Social Network Services

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### Abstract

Now a day's most of them are using social networking services (SNS) on regular basis. Twitter is that the one amongst the foremost common SNS wherever users post news, messages and conjointly exploitation for online public polling. As we all know Twitter already introduced online polling wherever users selecting appropriate suggestion's, leaders etc. Profile reasoning of social networking services users is effective for on-line polling, public, and personal selling and subject matter. Twitter profiler gender reasoning is examined by exploitation deep learning, image process, NLP. Earlier text process used for gender reasoning and conjointly exploitation image recognition techniques. Currently this paper introducing the hybrid techniques of image and text algorithms area unit exploitation for distinguishing gender reasoning. The attribute is provided from text mining algorithms and from image process techniques area unit combined to profiler gender reasoning.

**Keywords:** SNS, Twitter, Text Mining, Image Recognition

### 1. Introduction

Now a day's most of them are the use of social networking services (SNS) for share and changing views, guidelines, evaluations, information on several matters. Maximum of the corporations are encouraging to apply social networking services (SNS) for enhancing great and quantity in their products and services like flipkart, amazon and so forth. The primary problem is the SNS profile having their name, gender, age, a residence which is not openly to be had, however such facts is rather important for advertising. Then only the usage of this novel hybrid set of rules for identifying infer demographic facts of unknown customers. The summation of all consequences from the textual content mining and photograph processing algorithms to finding inference of each user of SNS.

In this paper, we proposed novel technique the aggregate of textual content and photo algorithms concurrently to locating SNS consumer gender inference. On this paper, we tested eastern twitter user's text and image facts. The novel set of rules takes tweets as input and gives output as a gender opportunity score of the consumer. The algorithm works in two important steps. Step (1) using processors are to locate gender probability ratings. Step (2) merging two chance rankings are based totally at the specific ratio. This result will supply records concerning social community carrier user gender inference.

Received (October 18, 2017), Review Result (January 10, 2018), Accepted (January 17, 2018)

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## SIGN LANGUAGE RECOGNITION WITH MULTI FEATURE FUSION AND ADABOOST CLASSIFIER

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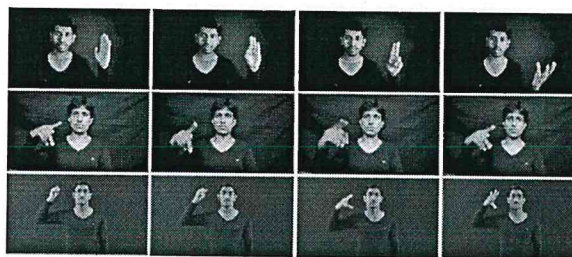
### ABSTRACT

Extracting and recognizing complex human movements from video sequences is a challenging task. In this paper a complicated problem from the class is approached using Indian sign language videos. A new segmentation model is developed using discrete wavelet transform and local binary pattern (LBP) features for segmentation. A 2D point cloud is created from the local sign shape changes in subsequent video frames. The classifier is fed with 2 types of features calculated from Global Haar features and Local LBP features. We also explore multiple feature fusion models after segmentation for improving the classification process with state of the art features such as HOG, SIFT and SURF. The extracted features input the Adaboost multi class classifier with labels forming the corresponding words. We test the classifier on Indian sign language video dataset prepared in controlled environments. The algorithms were tested for accuracy and correctness in identifying the signs.

**Keywords:** Indian sign language identification, adaboost classifier, multi feature fusion, discrete wavelet transform, local binary patterns.

### 1. INTRODUCTION

Automatic sign language recognition is a complicated problem for computer vision scientists, which involves mining and categorizing spatial patterns of human poses in videos. Sign language created from human action is defined as a temporal variation of human body in a video sequence, which is characterized by moving hands with respect to body, face, head including hand shapes. Automation encompasses mining the video sequences with computer algorithms for identifying similarities between actions in the unknown query dataset with that of the known dataset. Last decade has seen a jump in online video creation and the need for algorithms that can search within the video sequence for a specific human pose or object of interest. The problem is to extract, identify a human pose and classify into labels based on trained human signature action models [1] - [3]. The objective of this work is to extract the signature of Indian sign language poses from videos given a specific sign as input. However, the constraints are video resolution, frame rate, background lighting, scene change rate and blurring to name a few. The analysis on video content is a complicated process as the most of the users end up with constraints which act as a hindrance in automation of video object segmentation and classification. Sign language video sequences are having far many constraints for smooth extraction of sign signatures. Automatic sign extraction is complicated due to complex hand poses and body actions performed at different speeds depending on the signer. Figure 1 shows a set of lab captured Indian sign videos for training and testing the proposed algorithm.



**Figure-1.** Sign language datasets used in this work captured from various sensors at different object distances and background lighting variations.

Sign language is a visual mode of communication between two hearing impaired or hard hearing people. The communication foundations are based on finger shapes, hand shapes, hand movements in space with respect to body, hand orientations and facial expressions. The humans are trained exclusively to handle such huge amounts of information for years. For machine translation, the problem transforms into a 2D natural language processing problem. Many 1D/2D/3D models are proposed in literature with little success to bring the model close to real time implementation [4]- [8].

Extracting these complex movements from videos and classification requires a complex set of algorithms working in sequence. We propose to use silhouette detection and background elimination, human object extraction, local texture with shape reference model and 2D point cloud to represent the signers pose. Global and Local features are calculated that represents the exact shape of the signers' hand in the video sequence. For recognition, a multiclass multilabel Adaboost algorithm is proposed to classify query sign video based on the Indian sign language dataset.

The rest of the paper is organized into literature survey on the proposed techniques, theoretical background



# Sequential particle filter with covariance features classified with artificial neural nets for continuous Indian sign language recognition

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## Abstract

Machine translation of sign language is a complex and challenging problem in computer vision research. In this work, we propose to handle issues such as hands tracking, feature representation and classification for efficient interpretation of sign language from isolated sign videos. Hands tracking is attempted in a sequential format with one hand after the other by nullifying the effects of head movement using serial particle filter. The estimated hand positions in the video sequence are used to extract the hand portions to create a feature covariance matrix. This matrix is a compact representation of the hand features representing a sign. Adaptability of the feature covariance matrix is explored in developing relationships with new signs without creating a new feature matrix for individual signs. The extracted features are then applied to a neural network classifier which is trained with error backpropagation algorithm. Multiple experiments were conducted on a 181 class signs with 50 sentence formations with 5 different signers. Experimental results show the proposed sequential hand tracking is closer to ground truth. The proposed covariance features resulted in a classification accuracy of 89.34% with the neural network classifier.

**Keywords:** Sequential particle filter tracker; Indian sign language recognition; Covariance features; Artificial neural networks.

## 1. Introduction

Sign language recognition is a computer vision based intact intricate language that engages signs shaped by hand moments in amalgamation with facial expressions and postures. It maps speech communication to human signs and gestures enabling hearing impaired people to communicate with normal people. Dynamic hand movements are involved in gestures and they form signs such as numbers, alphabets and sentences. Classification of gestures can be identified as both static and dynamic. Static gestures involve a time invariant finger orientation whereas dynamic gestures support a time varying hand orientations and head positions.

Basically, Sign language is used by the hearing-impaired people for their communication. Sign language recognition systems forms a bridge between normal people and hearing-impaired people. Sign Language Recognition System (SLR) translates sign gestures into voice or text commands and vice versa primarily to assist deaf person or hearing-impaired person to communicate with the normal person. A normal person communicates with spoken language where as a deaf person uses sign language for communication.

A sign language recognition system is based on the five attributes of a human signer. They are hand and head recognition, hand and head orientation, hand movement, shape of hand and location of hand and head (depends up on back ground). Among the five parameters there are two parameters which are most important and they are hand and head orientation and hand movement in a direction.

There are two types of signs namely stationary and non-stationary signs. Stationary signs are the signs in which the movement of hand in describing the sign is one time as shown in the form of video frames in Fig.1. (a). Whereas, non-stationary signs are the signs in which the movement of hand is more than one time as shown in Fig. 1. (b).

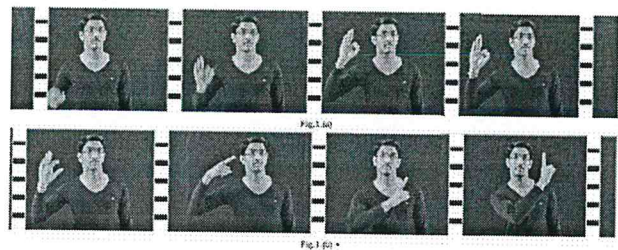


Fig. 1: (a) Stationary sign frames of sign "Hello", (b) Non-stationary sign frames for a sign "Good Morning".

Logically sign language understanding consists of linguistic analysis of hands tracking, hands shapes, hands orientations, sign verbalization, head movements and facial expressions. Sign language is in many ways different from spoken language such as facial and hand terminology, references in virtual signing space, and grammatical differences as explained.

In this work, we propose to identify hand movements in a sign sequentially using particle filter tracker and use covariance matrix to generate features of the tracked hands. A feature covariance matrix is built for both hands independently with the head removed. The feature covariance matrix is labelled for each sign class for training with artificial neural networks. This work pro-



# Two Stream Multi Modal Convolutional Neural Network for RGB – D based Indian Sign Language Recognition

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**Abstract---** Sign language recognition (SLR) has been challenging researchers for the past three decades now. The current algorithms on basic 2D RGB video data of sign language has solved problems that are specific to the data and the algorithms. However, there are many unsolved issues such as blurring, lighting and occlusions with the 2D video data of sign language. Advancements in visual sensor technology and their commercial availability has provided multiple sources of data with detailed information on the video objects by reducing the anomalies caused in the RGB video data. Microsoft Kinect is one such commercially available depth sensor which captures depth maps along with RGB video data. In this work we propose to use RGB and depth video data of sign language as inputs to a two-stream convolutional neural network (CNN) for training and testing. The dataset consists of 200 class labels from Indian sign language with 5 subjects in 5 different orientations. Hence, our RGB D sign language dataset has 5000 sign videos of which 4800 will be used for training and the remaining 200 are used for testing in one left train model. Gradient descent and error back propagation methods were applied for training the proposed conv net. To validate the proposed model, we also train and test the proposed CNN on NTU RGB D dataset. We compared our proposed framework with other SLR models and different network architectures to show that the proposed multi modal CNN has better inter class discrimination abilities.

**Keywords---** Mediation, Restorative Justice, Juvenile Technologies, Restorative Programs.

## I. Introduction

Sign language recognition is a computer vision based intact intricate language that engages signs shaped by hand moments in amalgamation with facial expressions and postures. It maps speech communication to human signs and gestures enabling hearing impaired people to communicate with normal people. Dynamic hand movements are involved in gestures and they form signs such as numbers, alphabets and sentences. Classification of gestures can be identified as both static and dynamic. Static gestures involve a time invariant finger orientation whereas dynamic gestures support a time varying hand orientations and head positions.

Basically, Sign language is used by the hearing-impaired people for their communication. Sign language recognition systems forms a bridge between normal people and hearing-impaired people. Sign Language Recognition System (SLR) translates sign gestures into voice or text commands and vice versa primarily to assist deaf person or hearing-impaired person to communicate with the normal person. A normal person communicates with spoken language where as a deaf person uses sign language for communication. A sign language recognition system is based on the five attributes of a human signer. They are hand and head recognition, hand and head orientation, hand movement, shape of hand and location of hand and head (depends up on back ground). Among the five parameters there are two parameters which are most important and they are hand and head orientation and hand movement in a direction.

Kinect sensor captures 3D depth images which are sometimes combined with RGB color video data to form an RGB-D video images. 3D sign language is explored to an extent with these sensors in the recent times. Many works have been proposed by extracting features from RGB video data [1][2][3] and depth video [4][5][6] separately using basic feature extraction models. In this work, we propose to use the two sources of data for better recognition using Convolutional neural network. The CNN is designed using VGG – 16 architectures [7], which is a deep neural network architecture. Inspired by the models in [8][9], we propose a flat VGG architecture with only eight layers. In the 8 layers, six are convolution layers and two are fully connected dense layers. Each stream of CNN gets RGB and depth

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Article History: Received: April 04, 2017, Revised: September 25, 2017, Accepted: September 28, 2017



## Performance Based Incentives Policy: A Geometric Hybrid Model

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### Abstract

Performance based incentives are incentives that are disbursed based on the authentic performance of an employee for a stipulated resulted period. Using a PBI policy is enormously successful in inspiring professors and other stakeholder to focus on core areas of an educational institute. In this article, the author proposed a geometric hybrid model for computing performance based an incentive which helps to tie compensation directly to specific institutional goals and management objectives of an institute. In PBI policy, performance of the faculty is always evaluated based on his or her academic output in terms of result or percentage of marks. However sometimes faculty argues that academic output always depends on the subject toughness rather than the faculty's performance in terms of results. On the contrary, someone may be argued that the criteria of student feedback system are the best decisive factor to evaluate faculty's performance. Hence, a traditional PBI policy always consider both the results and student feedback criterion as decisive factor for appraising faculty's performance but it was failed in considering subject toughness and quality of students input. To overcome this gap, the author proposed a geometric hybrid model of performance based incentive policy which considers a set of notional variable like, subject toughness, subject's results and average result of all subjects. This geometric hybrid model delivers competitive pay for cutthroat levels of performance and also encourages employees to constantly develop new skills. This model suggests a mathematical proposition for evaluation of professor's performance through justification proportionate variables in technical educational institutes.

**Keywords:** PBI Policy, Geometric hybrid model, Measurement & Result analysis

### 1. Introduction

Incentives are instant rewards and they create immediate effect on performance. Some of the researchers portrayed that faculty is always rewarded based on his/her output. Since the quality of output rewarded, most of the eminent faculty can be moved to areas of low socio-economic status due to lack of a fast track mechanism to identify the performance and propose the incentives. Hence, a strong performance appraisal system assists an educational institute to establish potential man force; analysis employee performance is essential to determine if further training is needed or if dismissal is appropriate. Sanction of the incentive is always preceded by appraisal of an employee at various levels. At the same time, it's also required to consider special incentives for specific individual performances which should be made with orderly paid, in order that the employee gets motivated by the appreciation of his/her contribution and uphold self-esteem. As per the psychometric studies motivation plays a vital role in law of behavior that higher

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Inorganica Chimica Acta

Volume 482, 1 October 2018, Pages 830–837

Research paper

# A 3D supramolecular assembly of Co(II) MOF constructed with 2,5-pyridinedicarboxylate strut and its catalytic activity towards synthesis of tetrahydrobiphenylene-1,3-dicarbonitriles

Kranthi Kumar Gangu<sup>a</sup>, Suresh Maddila<sup>a</sup>, Saratchandra Babu Mukkamala<sup>b</sup>, Sreekantha B. Jonnalagadda<sup>a</sup>✉

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## Highlights


- Hydrothermal synthesis of new MOF, [Co(2,5-Pydc)(H<sub>2</sub>O)<sub>2</sub>].H<sub>2</sub>O.
- Co<sup>2+</sup> attains distorted octahedral geometry with 2,5-Pydc and H<sub>2</sub>O.
- Versatile supramolecular 3D architecture is developed.
- Unsaturated metal centres of Co<sup>2+</sup> upon activation acted as Lewis acidic sites.
- Worthy catalyst for contemporary organic synthesis.

## Abstract

A cobalt based MOF, [Co(2,5-Pydc)(H<sub>2</sub>O)<sub>2</sub>].H<sub>2</sub>O (**CoPy**) was hydrothermally synthesized by employing 2,5-Pyridinedicarboxylic acid (2,5-Pydc) as organic strut; and its characteristics were characterized by single crystal XRD, FT-IR, TGA and fluorescent measurements. The single crystal XRD studies reveals that the compound crystallized in orthorhombic crystal



## A viable and efficacious catalyst, CeO<sub>2</sub>/HAp, for green synthesis of novel pyrido[2,3-d]pyrimidine derivatives

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Sreekantha B. Jonnalagadda<sup>1</sup> 

Received: 17 July 2017 / Accepted: 6 October 2017 / Published online: 17 October 2017  
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**Abstract** A facile one-pot green protocol at room temperature has been devised for the synthesis of novel pyrido[2,3-d]-pyrimidine derivatives catalyzed by CeO<sub>2</sub>-doped hydroxyapatite (CeO<sub>2</sub>/HAp) with ethanol as solvent. This highly selective method with excellent yields (89–96%) involves a four-component reaction between malononitrile, substituted aldehyde, dimethylbarbituric acid and ammonium acetate. CeO<sub>2</sub>/HAp was synthesized and characterized by P-XRD, TGA, TEM and SEM analyses. The structures of the target molecules were confirmed by diverse spectroscopic methods (<sup>1</sup>H NMR, <sup>15</sup>N NMR, <sup>13</sup>C NMR, and HRMS). Additional benefits of this eco-friendly approach are the operational simplicity, a stable catalyst with good reusability (at least 6 times), short reaction times (< 45 min) and no need for chromatographic separations. All these features make the proposed method economical and sustainable.

**Electronic supplementary material** The online version of this article (doi:10.1007/s11164-017-3174-2) contains supplementary material, which is available to authorized users.

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# Self-Supported FeCo<sub>2</sub>S<sub>4</sub> Nanotube Arrays as Binder-Free Cathodes for Lithium–Sulfur Batteries

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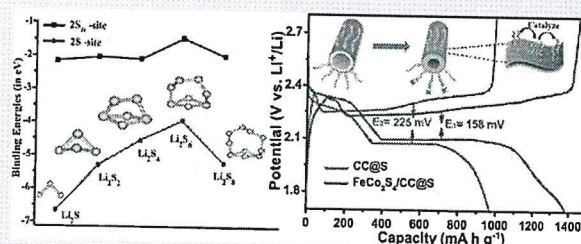
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## Supporting Information

**ABSTRACT:** Inhibiting the shuttle effect, buffering the volume expansion, and improving the utilization of sulfur have been the three strategic points for developing a high-performance lithium–sulfur (Li–S) battery. Driven by this background, a flexible sulfur host material composed of FeCo<sub>2</sub>S<sub>4</sub> nanotube arrays grown on the surface of carbon cloth is designed for a binder-free cathode of the Li–S battery through two-step hydrothermal method. Among the rest, the interconnected carbon fiber skeleton of the composite electrode ensures the basic electrical conductivity, whereas the FeCo<sub>2</sub>S<sub>4</sub> nanotube arrays not only boost the electron and electrolyte transfer but also inhibit the dissolution of polysulfides because of their strong chemical adsorption. Meanwhile, the hollow structures of these arrays can provide a large inner space to accommodate the volume expansion of sulfur. More significantly, the developed composite electrode also reveals a catalytic action for accelerating the reaction kinetic of the Li–S battery. As a result, the FeCo<sub>2</sub>S<sub>4</sub>/CC@S electrode delivers a high discharge capacity of 1384 mA h g<sup>−1</sup> at the current density of 0.1 C and simultaneously exhibits a stable Coulombic efficiency of about 98%.

**KEYWORDS:** polar nanotube arrays, catalytic effect, chemical adsorption, binder-free, lithium–sulfur batteries



## 1. INTRODUCTION

In recent decades, the development of traditional rechargeable lithium-ion batteries relying on intercalation reactions has encountered some ineluctable hurdles, such as limited energy density, gradual depletion of lithium resources, and the ever-rising costs.<sup>1,2</sup> It is considered insufficient to satisfy the ever-growing demands of rapid developing electric vehicles, large-scale energy storage devices, and advanced portable electronics in the long term. Of all the potential candidates for next-generation high-energy rechargeable batteries, such as metal–sulfur (Li–S) batteries, employing naturally abundant sulfur as a cathode, have shown overwhelming superiorities owing to their high theoretical capacity (1675 mA h g<sup>−1</sup>) and energy density (2600 W h kg<sup>−1</sup>) alongside the low cost, nontoxicity, and eco-friendliness.<sup>3</sup> However, the practical application of the Li–S batteries is still being impeded by several intrinsic demerits, which are displayed as follows: (1) the insulating nature of sulfur ( $5 \times 10^{-30}$  S cm<sup>−1</sup> at 25 °C) and its lithiated products (Li<sub>2</sub>S/Li<sub>2</sub>S<sub>2</sub>) bring about low utilization of active species and thus decrease the specific capacity of the cathode material; (2) the high solubility and notorious shuttle effect of intermediate polysulfides (Li<sub>2</sub>S<sub>x</sub>,  $2 \leq x \leq 8$ ) in the electrolyte

during the circulation process lead to the loss of active species and eventually result in fast capacity fade and poor Coulombic efficiency; and (3) the huge volumetric expansion of sulfur (≈80%) upon lithiation always can cause the microstructural collapse of cathode material, which in part accounts for the inferior cycle life of Li–S batteries and also raises safety concerns.

To address aforementioned issues, extensive efforts and improvements have been made during the past decades, including rational design of novel composite cathode materials, electrolytes, separators, anode protections, different cell structures, and so on.<sup>5</sup> Among these approaches, encapsulating sulfur into nanometer-sized porous structure of the carbon matrix has already been proven effective, which usually can improve the conductivity of cathode materials and increase the utilization of the active material because of their superb electron pathways and three-dimensional (3D) interconnected nature.<sup>6,7</sup> However, the “fly in the ointment” is that the above designs are impeded by the weak physical van der Waals

Received: September 28, 2018

Accepted: November 27, 2018

Published: November 27, 2018



# SCIENTIFIC REPORTS

## OPEN Tweaking the Electronic and Optical Properties of $\alpha$ -MoO<sub>3</sub> by Sulphur and Selenium Doping – a Density Functional Theory Study

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Received: 7 April 2018

Accepted: 22 June 2018

Published online: 04 July 2018

First-principles calculations were carried out to understand how anionic isovalent-atom doping affects the electronic structures and optical properties of  $\alpha$ -MoO<sub>3</sub>. The effects of the sulphur and selenium doping at the three unique oxygen sites (O<sub>1</sub>, O<sub>2</sub>, and O<sub>3</sub>) of  $\alpha$ -MoO<sub>3</sub> were examined. We found that the valence p orbitals of Sulphur/Selenium dopant atoms give rise to impurity bands above the valence band maximum in the band structure of  $\alpha$ -MoO<sub>3</sub>. The number of impurity bands in the doped material depends on the specific doping sites and the local chemical environment of the dopants in MoO<sub>3</sub>. The impurity bands give rise to the enhanced optical absorptions of the S- and Se-doped MoO<sub>3</sub> in the visible and infrared regions. At low local doping concentration, the effects of the dopant sites on the electronic structure of the material are additive, so increasing the doping concentration will enhance the optical absorption properties of the material in the visible and infrared regions. Further increasing the doping concentration will result in a larger gap between the maximum edge of impurity bands and the conduction band minimum, and will undermine the optical absorption in the visible and infrared region. Such effects are caused by the local geometry change at the high local doping concentration with the dopants displaced from the original O sites, so the resulting impurity bands are no long the superpositions of the impurity bands of each individual on-site dopant atom. Switching from S-doping to Se-doping decreases the gap between the maximum edge of the impurity bands and conduction band minimum, and leads to the optical absorption edge red-shifting further into the visible and infrared regions.

Molybdenum trioxide (MoO<sub>3</sub>) has garnered much research attention recently due to this material offering promising applications, coupled with its non-toxic nature, low cost and outstanding catalytic properties<sup>1–7</sup>. Further, MoO<sub>3</sub> is found to be one of the most important metal oxides used as the electron-injection layers and the electrode material in the fast-growing field of photovoltaics and solar-cell devices. Amongst the three different polymorphic phases of MoO<sub>3</sub>,  $\alpha$ -MoO<sub>3</sub> with the orthorhombic layered crystal structure is thermodynamically most stable.  $\alpha$ -MoO<sub>3</sub> is an n-type semiconductor with a layered crystal structure with a wide band gap of 3.2 eV<sup>8</sup>. Due to its high band gap,  $\alpha$ -MoO<sub>3</sub> is not optimal to be used as photocatalyst for solar-energy applications directly. In order to utilize  $\alpha$ -MoO<sub>3</sub> effectively as a photocatalyst, we need to modify its structure to reduce the band gap for the improved efficiency in harness the solar energy of which the major component is from the visible region. So far, significant progress has been made in the fabrication and modification of  $\alpha$ -MoO<sub>3</sub>-based materials and devices, and the performance and reliability of the material has been greatly improved. Nano-sized MoO<sub>3</sub>, such as nanoporous, nanobelts and nanorods, has drawn substantial attention and been utilized in various applications, such as electrochromic/photochromic devices<sup>9</sup>, pseudocapacitive charge storage<sup>10</sup>, supercapacitors<sup>11,12</sup>, gas sensors<sup>13,14</sup>, lithium-ion batteries<sup>15</sup> and effective heterogeneous catalysts<sup>16</sup>. Kumar *et al.*<sup>10</sup> engineered the surface of MoO<sub>3</sub> nanobelts for electrochemical cell applications and reported that their specific capacitance is enhanced with relatively high stability. Hamwi *et al.*<sup>17</sup> studied p-type doping efficiency of MoO<sub>3</sub> in organic hole-transport

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## Cyclohexyl-diimine capped lower rim 1,3-di-derivatized calix[4]arene conjugate as sensor for $\text{Al}^{3+}$ by spectroscopy, microscopy, titration calorimetry and DFT computations

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### ABSTRACT

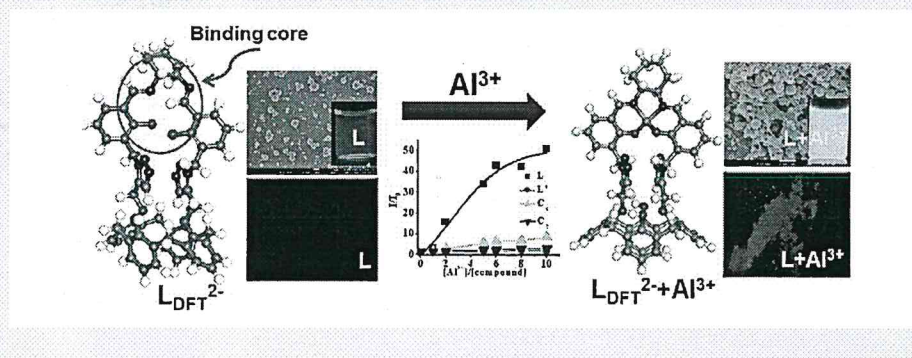
A cyclohexane-*trans*-1,2-diimine capped conjugate of 1,3-calix[4]arene (L) has been synthesized and characterized using different analytical and spectral techniques. L has been shown to be sensitive toward  $\text{Al}^{3+}$  by exhibiting ~45-fold enhancement in its emission intensity at 445 nm upon complexation. All the other 15 metal ions showed almost no or minimal change in the fluorescence intensity of the L supporting that none of those 15 ions is sensed by L. The complexation between L and  $\text{Al}^{3+}$  has been further confirmed by absorption spectroscopy, isothermal titration calorimetry and ESI MS. The isotopic peak pattern of the ESI MS peak clearly confirmed the presence of aluminum in the 1:1 complex formed. The need for the flexible cap moiety for bringing selectivity to  $\text{Al}^{3+}$  was proven by comparing the titration studies with the corresponding control molecules. The sensing of  $\text{Al}^{3+}$  by L in the solid powder was demonstrated by fluorescence microscopy. The supramolecular behavior of L changes from simple spherical type morphology in L to an aggregated micro pots and fibers upon  $\text{Al}^{3+}$  binding. The DFT computational study yielded a distorted tetrahedral complex of the dianionic receptor resulting in  $\text{AlN}_2\text{O}_2$  core.

### ARTICLE HISTORY

Received 29 November 2017  
Accepted 3 January 2018

### KEYWORDS

Receptor for  $\text{Al}^{3+}$ ; cyclohexyl-diimine capped lower rim 1,3-di-calix[4]arene conjugate; scanning electron microscopy (SEM); isothermal titration calorimetry (ITC); DFT computational study



### Introduction

The development of a chemosensor for selective recognition of one of the earth's most abundant metal ion, viz.,  $\text{Al}^{3+}$  is of prime interest (1–11). Aluminum is a widely used metal in daily life, as food additive, as surgery materials, and in medicines, cosmetics and packaging because of its stable physical and chemical properties (12–14). Excess of  $\text{Al}^{3+}$  in blood may cause neurodegenerative disorders like Parkinson's and Alzheimer's diseases (15–19). Therefore, the detection of  $\text{Al}^{3+}$  is important in biochemical field. To date, very few molecular receptors have been reported to

selectively sense  $\text{Al}^{3+}$  unlike other metal ions because of its strong hydration ability and specific coordination capability (20–29). Conjugates of 1,3-di-derivatized calix[4]arene have been given greater attention owing to their stable cone conformation, easy characterization and easy functionalization to result in requisite size, shape and flexibility to act as specific receptor for ion and or a molecule (30, 31). Recently, we have reported the selective recognition of  $\text{Mg}^{2+}$  by *o*-phenylene-diimine capped conjugate of 1,3-diderivative of calix[4]arene ( $\text{C}_2$ ) (32). While exploring the role of the capping moiety in the metal ion recognition,



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## Exploring the formation and electronic structure properties of the g-C<sub>3</sub>N<sub>4</sub> nanoribbon with density functional theory

To cite this article before publication: Hong-Zhang Wu *et al* 2018 *J. Phys.: Condens. Matter* in press <https://doi.org/10.1088/1361-648X/aab2ca>

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## Design, Analysis and Parametric Study of Rectangular Dielectric Resonator Antenna Arrays

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### Abstract

A Rectangular array dielectric resonator antennas are applicable for microwave range of frequencies and the proposed antennas are built with a dielectric constant  $\epsilon_r$  of 10.2, the Rectangular array DRAs are excited by a Coaxial Probe feed line mechanism. These antennas are suited for mobile broadband applications like 4G, 5G services. The modeled antenna is placed on a ground plane with a size of  $116 \times 116 \times 0.0029 \text{ mm}^3$ . The antenna parametric results were intent through CST Microwave Studio Suite 2017 and around the frequency of 10 GHz, a High gain of 10 dB result given by these proposed Array DRAs are better than the existed conference proceeding titled as high permittivity design of rectangular dielectric resonator antenna for C band applications.

**Keywords:** Dielectric resonator antennas (DRAs), Probe feed and CST Studio Suite

### 1. Introduction

The technology grows from the 1st generation, such as 1G to 2G, 3G, 4G and so on up to 5G. Each and every of the generations of the technology has several variations and innovations. The fifth generation (5G) technology is anticipated to finish the fourth generation technology and provides solutions to the shortage arising from 4G[1] like restricted information measure and speed, As 5G is developed and implemented there'll be a significant demand particularly on the user instrumentality and base station infrastructures [1]. Almost all mobile communication systems use current cellular spectrum in the range of 300 MHz gigahertz. Hence, this spectrum (below 3 GHz band) has been overcrowded. That is why modern communication system has been shifting upward to the mm wave band. In 5G requirements, the antenna should at least have a gain of 12 dBi and bandwidth more than 1 GHz [2]. There are several researchers done on wireless antenna for millimeter wave band[3-6].

Due to their attractive features and immense characteristic applications, DRAs are largely using in present day wireless communications. These are having dielectric constant ranging from 10 to 100 for high frequency applications. In 1939 Ritchmyer showed that dielectric objects in the form of toroids could function as microwave resonators, if the shapes, permittivities and feed mechanisms are appropriately chosen. Many years later in 1983, McAllister *et al.* showed that a cylindrical dielectric slab placed atop a ground plane, and excited by a probe fed through the ground plane into the dielectric, will radiate in a direction normal to the ground plane when the excitation frequency is at or near the resonant frequency of the dielectric slab. Soon thereafter the investigation extended to orthorhombic resonators. Dielectric resonator antenna (DRA) [6-7] has been of interest due to their low loss, high permittivity, light weight and ease of

Received (October 15, 2017), Review Result (December 19, 2017), Accepted (January 26, 2018)



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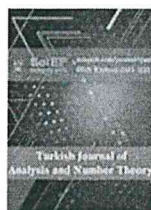
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