

# **2021 11th International Conference on Cloud Computing, Data Science & Engineering (Confluence 2021)**

**Noida, India  
28-29 January 2021**

**Pages 1-551**



**IEEE Catalog Number: CFP2169Y-POD  
ISBN: 978-1-6654-3034-0**

**Copyright © 2021 by the Institute of Electrical and Electronics Engineers, Inc.  
All Rights Reserved**

*Copyright and Reprint Permissions:* Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

***\*\*\* This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP2169Y-POD
ISBN (Print-On-Demand):	978-1-6654-3034-0
ISBN (Online):	978-1-6654-1451-7

**Additional Copies of This Publication Are Available From:**

Curran Associates, Inc  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: (845) 758-0400  
Fax: (845) 758-2633  
E-mail: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

## TABLE OF CONTENTS

Artificial Neural Networks in Healthcare: A Systematic Review .....	1
<i>Arushi Pandit, Anchal Garg</i>	
Deep Neural Architecture for Veracity Analysis of Multimodal Online Information.....	7
<i>Priyanka Meel, Dinesh Kumar Vishwakarma</i>	
Skin Cancer Classification Using Convolutional Neural Networks .....	13
<i>R. Raja Subramanian, Dintakurthi Achuth, P. Shiridi Kumar, Kovvuru Naveen Kumar Reddy, Srikar Amara, Adusumalli Suchan Chowdary</i>	
Language Identification Using Stacked Convolutional Neural Network (SCNN) .....	20
<i>Navdeep Bohra, Vishal Bhatnagar</i>	
Fuzzy Logic Based Techniques for Early Software Defect Assessment.....	26
<i>Fazlur Rahman, Piyush Rai, H. B. Yadav</i>	
A Systematic Review on Spam Filtering Techniques Based on Natural Language Processing Framework.....	30
<i>Pranjul Garg, Nancy Girdhar</i>	
Development of Fuzzy-Logic Based Gyms Air Quality Control.....	36
<i>Bakhytzhan Omarov, Balnur Kendzhayeva, Nurzhan Omarov, Ruslan Dzhabayev, Yerzhan Paizullayev, Murat Yerdenov</i>	
Artificial Intelligence in Stroke Imaging .....	41
<i>Azhar Tursynova, Batyrkhan Omarov, Kamilya Shuketayeva, Meirat Smagul</i>	
A Novel Neural Model Based Framework for Detection of GAN Generated Fake Images .....	46
<i>Samaksh Agarwal, Nancy Girdhar, Himanshu Raghav</i>	
Ranking Based Question Answering System with a Web and Mobile Application.....	52
<i>Abhishek Agarwal, Vijay Kumari, Yashvardhan Sharma, Lavika Goel</i>	
A New Approach of Data Clustering Using Quantum Inspired Particle Swarm Optimization Based Fuzzy c-means .....	59
<i>Sandip Dey, Sourav De, Shouvik Paul</i>	
Smart Implementation of Computer Vision and Machine Learning for Pothole Detection.....	65
<i>Ashutosh Shah, Gaurav Sharma, Lava Bhargava</i>	
A Survey on Sentiment Analysis .....	70
<i>R. Raja Subramanian, Nukala Akshith, Gogula Narasimha Murthy, Manchala Vikas, Srikar Amara, Kamam Balaji</i>	
Advanced Healthcare System Using Artificial Intelligence .....	76
<i>Santosh Sanjeev, Gowtham Sai Ponnekanti, G. Pradeep Reddy</i>	
Security Risk Assessment of Information Systems in an Indeterminate Environment.....	82
<i>Basundhara Basumatary, Chandan Kumar, Dilip Kumar Yadav</i>	
Application of Particle Swarm Optimization for Software Defect Prediction Using Object Oriented Metrics.....	88
<i>Ruchika Malhotra, Nishant Nishant, Spandun Gurha, Vishal Rathi</i>	

Jodani: A Spell Checking and Suggesting Tool for Gujarati Language.....	94
<i>Himadri Patel, Bankim Patel, Kalpesh Lad</i>	
Analysis of Human Activity Recognition Using Deep Learning.....	100
<i>Lamiyah Khattar, Chinmay Kapoor, Garima Aggarwal</i>	
Deep Multimodal Fusion for Subject-Independent Stress Detection.....	105
<i>K. Radhika, V. Ramana Murthy Oruganti</i>	
HR During Covid-19 Era: Study on Recent HR Transformations Through Technological Tools and Trends.....	110
<i>Mansi Saxena, Teena Bagga, Sangeeta Gupta</i>	
Application of Two-Class Neural Network-Based Classification Model to Predict the Onset of Thyroid Disease.....	114
<i>Tabrej Khan</i>	
A Review of Sentiment Analysis Techniques Using Soft Computing Approaches .....	119
<i>Upasana Jha, Lakshya Tyagi, Divya Kansal, Subhecha Chakraborty, Abhishek Singhal</i>	
Automatic Gesture Recognizer Using Motion Tracking Device and Support Vector Machine.....	125
<i>Ishank Agarwal, Rajat Mishra, Vishwaratna Srivastava, Surbhi Vijn</i>	
Human Pose-Estimation and Low-Cost Interpolation for Text to Indian Sign Language .....	130
<i>Sowmya Jayaram Iyer, P. Saranya, M. Sivaram</i>	
US Presidential Election 2020 Prediction Based on Twitter Data Using Lexicon-Based Sentiment Analysis.....	136
<i>Deni Kurnianto Nugroho</i>	
Improving Hidden Markov Model for Very Low Resource Languages: An Analysis for Assamese Parts of Speech Tagging .....	142
<i>Diganta Baishya, Rupam Baruah</i>	
Exploring Large Language Models in a Limited Resource Scenario .....	147
<i>Anand Panchbhai, Smarana Pankanti</i>	
Emotion Recognition from Speech Using Artificial Neural Networks and Recurrent Neural Networks .....	153
<i>Shambhavi Sharma</i>	
Application of Artificial Intelligence in Human Resource Management Practices .....	159
<i>Pooja Tiwari, Rudresh Pandey, Vikas Garg, Abhishek Singhal</i>	
Spam Detection Using ANN and ABC Algorithm.....	164
<i>Amar Singh, Nidhi Chahal, Simranjit Singh, Suneet Kumar Gupta</i>	
Artificial Intelligence-Based Remote Diagnosis of Sleep Apnea Using Instantaneous Heart Rates .....	169
<i>Prabodh Panindre, Vijay Gandhi, Sunil Kumar</i>	
Drug Recommendation System Based on Sentiment Analysis of Drug Reviews Using Machine Learning .....	175
<i>Satvik Garg</i>	
Comparing Performance of Evolutionary Algorithms - A Travelling Salesman Perspective .....	182
<i>Immanuel Savio Donbosco, Udit K. Chakraborty</i>	

Application of AO* Algorithm in Recognizing the Optimum Refactoring Sequence for Examining the Effect on Maintainability: An Empirical Study .....	188
<i>Sandhya Tarwani, Anuradha Chug</i>	
Gaps Identification for User Experience for Model Driven Engineering .....	196
<i>Puneet Kumar Aggarwal, Swati Sharma, Riya, Parita Jain, Anupam</i>	
Computation of Performance Parameters for Three-Phase SEIG Using Genetic Algorithm.....	200
<i>Yatender Chaturvedi, Varun Gupta, Ankit Goel, Sumit Kumar</i>	
An Intelligent Intrusion Detection Scheme Powered by Boosting Algorithm .....	205
<i>Subham Divakar, Rojalina Priyadarshini, Rabindra Kumar Barik, Diptendu Sinha Roy</i>	
Graph Coloring Based Scheduling Algorithm to Automatically Generate College Course Timetable.....	210
<i>P. Nandal, Ankit Satyawali, Dhananjay Sachdeva, Abhinav Singh Tomar</i>	
Advanced Weighted Round Robin Procedure for Load Balancing in Cloud Computing Environment .....	215
<i>Monalisa Kushwaha, B. L. Raina, Shailendra Narayan Singh</i>	
Towards Securing Cloud & Information - Vision & Challenges .....	220
<i>Abhinav Rawat, Akshat Singhal, Tanupriya Choudhury</i>	
Your Password is Music to My Ears: Cloud Based Authentication Using Sound .....	227
<i>Anthony Phipps, Karim Ouazzane, Vassil Vassilev</i>	
Optimal Task Offloading and Resource Allotment Towards Fog-Cloud Architecture .....	233
<i>Vibha Jain, Bijendra Kumar</i>	
Performability Analysis of FogGIS Model for Geospatial Web Services.....	239
<i>Sunil K. Panigrahi, Rabindra Kumar Barik, Satyaban Behera, Lalbihari Barik, Sudhansu Shekhar Patra</i>	
Comparative Analysis of Colliding Bodies Optimization-Based Inventory Management Over Other Heuristics: Cloud with Blockchain Criteria.....	244
<i>C. Govindasamy, A. Antonidoss</i>	
VM Consolidation Based on Overload Detection and VM Selection Policy .....	252
<i>Sudibyajyoti Jena, Likheta Kashori Sahu, Sambit Kumar Mishra, Bibhudatta Sahoo</i>	
Evolution of Emerging Computing Paradigm Cloud to Fog: Applications, Limitations and Research Challenges .....	257
<i>Mohit Kumar, Kalka Dubey, Rakesh Pandey</i>	
Role of Machine Learning in Resource Allocation of Fog Computing .....	262
<i>Sunakshi Mehta, Akansha Singh, Krishna Kant Singh</i>	
Workload Prediction Over Cloud Server Using Time Series Data .....	267
<i>Mahendra Pratap Yadav, Nisha Pal, Dharmendar Kumar Yadav</i>	
Big Data and Customer Relationship Management: Impact on General Insurance Companies in UAE.....	273
<i>Shahzia Khan, Roopesh Reddy Alla</i>	
Feature Selection and Analysis in Air Quality Data .....	280
<i>Manish Mahajan, Santosh Kumar, Bhasker Pant, Umesh Kumar Tiwari, Rijwan Khan</i>	

Big Data- Forecasting Digital Currency with R .....	286
<i>Livea Rose Paul, Lipsa Sadath</i>	
Emotion Analysis in Text Using TF-IDF .....	292
<i>Varun Sundaram, Saad Ahmed, Shaik Abdul Muqtadeer, R. Ravinder Reddy</i>	
A Study on Developing Effective Option Trading Strategy on Nifty Index in National Stock Exchange Using Data Mining.....	298
<i>Savan K. Patel, Jigna B. Prajapati, Hiral R. Patel</i>	
Understanding Brand Authenticity Sentiments Using Big Data Analytics .....	304
<i>Harmit Singh, Akanksha Yadav, Rishabh Bansal, Shuchi Mala</i>	
RAKSHAK: Resilient and Scalable Demand Response Management Scheme for Smart Grid Systems.....	309
<i>Aparna Kumari, Sudeep Tanwar</i>	
Big Data-Driven Marketing Enabled Business Performance: A Conceptual Framework of Information, Strategy and Customer Lifetime Value.....	315
<i>Anuj Tripathi, Teena Bagga, Shubham Sharma, Sushant Kumar Vishnoi</i>	
$\rho$ Reveal: An AI-Based Big Data Analytics Scheme for Energy Price Prediction and Load Reduction .....	321
<i>Aparna Kumari, Sudeep Tanwar</i>	
Predicting the Prevalence Rate of COVID-19 Falsity on Temperature .....	327
<i>Ananya Rakhra, Ishika Jain, Raghav Gupta, Madhulika Bhatia</i>	
Data Mining Algorithms(KNN & DT) Based Predictive Analysis on Selected Candidates in Academic Performance .....	332
<i>M. Ramalingam, R. Ilakkiya</i>	
Cyberbullying Detection and Prevention: Data Mining in Social Media .....	338
<i>Daniyar Sultan, Azizah Suliman, Aigerim Toktarova, Batyrkhan Omarov, Satmyrza Mamikov, Gulbakhram Beissenova</i>	
Study on Parameters Influencing the VM Migration in Datacenters .....	343
<i>M. R. Anala, Sharadadevi Kaganurmamath</i>	
Summarization of Band Selection Methods for Hyperspectral Images .....	348
<i>Jatin Chopra, Smriti Sehgal</i>	
COVID-19: Employee Fever Detection with Thermal Camera Integrated with Attendance Management System .....	355
<i>Atika Gupta, Sudhanshu Maurya, Nidhi Mehra, Divya Kapil</i>	
Multilevel Image Segmentation Using Modified Red Deer Algorithm.....	362
<i>Sandip Dey, Sourav De, Abhirup Deb, Soumyaratna Debnath</i>	
Differential Diagnosis of Cervical Lymph Nodes in CT Images Using Modified VGG-Net .....	369
<i>Hitesh Tekchandani, Shrish Verma, Narendra D. Londhe, Rajiv Ratan Jain, Avani Tiwari</i>	
PSO Based Fuzzy-Genetic Optimization Technique for Face Recognition.....	374
<i>R. Raja Subramanian, Harini Mohan, Ardhala Mounika Jenny, Dubba Sreshta, Maddineni Lakshmi Prasanna, Prasanna Mohan</i>	

Notice of Violation: Notice of Removal: Neurological Tissue Image Processing & Analysis in Gene Therapy.....	380
<i>Aditya Garg, Poorvika Singh Negi, Roshan Lal, Yash Tewari, Aditya Bajaj</i>	
Touching Character Segmentation for Printed Odia Document .....	387
<i>Sanjibani Sudha Pattanayak, Ramesh Chandra Malik, Sateesh Kumar Pradhan, Aradhana Kar</i>	
Segmentation of Low-Grade Gliomas Using U-Net VGG16 with Transfer Learning.....	393
<i>Dwilaksana Abdullah Rasyid, Guan Hua Huang, Nur Iriawan</i>	
Deep Learning Based Diagnosis of Diseases Using Image Classification .....	399
<i>Ansh Saxena, Shiva Singh Tomar, Gaurav Jain, Richa Gupta</i>	
Kannada Character Recognition Using Multi-Class SVM Method.....	405
<i>Kusumika Krori Dutta, Sunny Arokia Swamy, Anushua Banerjee, Rashi B. Divya, R. Chandan, Deepak Vaprani</i>	
Classification of Thalassemia Patients Using a Fusion of Deep Image and Clinical Features .....	410
<i>Shikha Purwar, Rajiv Tripathi, Ravi Ranjan, Renu Saxena</i>	
Improved Real-Time Approach to Static Hand Gesture Recognition.....	416
<i>B. Bhavitha, R. Divyaprakash, Vedha T. Selvam, V. Vinith Kumar, R. Ramanathan</i>	
Text Document Summarization Using POS Tagging for Kannada Text Documents.....	423
<i>R. Jayashree, Basavaraj S. Anami, B. K. Poornima</i>	
Performance Analysis of Incremental Learning Strategy in Image Classification .....	427
<i>Gaurav Jaiswal</i>	
Improved Classification for Pneumonia Detection Using Transfer Learning with GAN Based Synthetic Image Augmentation .....	433
<i>Devansh Srivastav, Akansha Bajpai, Prakash Srivastava</i>	
Analyzing the Psychological Condition of Pilots Through Computer Aided Graphology .....	438
<i>Arnav Bhardwaj, Shilpi Sharma</i>	
A Waste Management Technique to Detect and Separate Non-Biodegradable Waste Using Machine Learning and YOLO Algorithm.....	443
<i>Aishwarya Aishwarya, Parth Wadhwa, Owais Owais, Vasudha Vashisht</i>	
Water Quality Estimation Using Computer Vision in UAV.....	448
<i>Chiranjeev Sharma, Isha Isha, Vasudha Vashisht</i>	
An Approach to Image Denoising Using Autoencoders and Spatial Filters for Gaussian Noise.....	454
<i>Annapurna P. Patil, Ananya Pramod, Ashwin Harish, Kaushik Singh, Keerthana Purushotham</i>	
A Comparative Study on CNN Based Low-Light Image Enhancement.....	459
<i>Kanishk Jayant Lal, Deepanshu Rana, Anil Singh Parihar</i>	
Automated Vehicle Numberplate Detection and Recognition .....	465
<i>Gaurav Joshi, Shreya Kaul, Akansha Singh</i>	
Advancements in Image Splicing and Copy-Move Forgery Detection Techniques: A Survey.....	470
<i>Ishan Jain, Nidhi Goel</i>	

3DGPRIIPS: 3-D Ground Penetrating Radar Image Processing System.....	476
<i>G. Ramesh Chandra, K. Rajiv, B. Basaveswara Rao</i>	
Analysis of Forest Fire in Australia Using Visible Infrared Imaging Radiometer Suite.....	482
<i>Sarath Raj Nadarajan Assari Syamala, Anusha Santhosh, Rameela Ramesh</i>	
Detecting Depression in Different Stages of Alzheimer Using PET Imaging .....	487
<i>Pallavi Dwivedi, Jatin Chopra, Madhulika Bhatia</i>	
A Machine Learning Approach for Diagnosing Neurological Disorders Using Longitudinal Resting-State fMRI.....	494
<i>K. Devika, V. Ramana Murthy Oruganti</i>	
ConvNet Based Single Image Deraining Methods: A Comparative Analysis .....	500
<i>Anil Singh Parihar, Chirag Jasuja, Devanshu Gupta, Harshit Gupta</i>	
Application of Deep Learning for Crowd Anomaly Detection from Surveillance Videos .....	506
<i>Karishma Pawar, Vahida Attar</i>	
MRI Retinal Image Segmentation Using Integrated Approach of Fuzzy C-Means Clustering, and Active Contouring .....	512
<i>Rahul Chauhan, Navneet Kaur, Chandni Tiwari</i>	
IoT Security Enhancement with Automated Identification Device Using IOT SENTINEL .....	518
<i>R. Ganesh Babu, V. Vijey Nathan, J. Bino, C. Amali, S. Ganesh</i>	
Using BFD1000 and Raspberry Pi for Autonomous Vehicle.....	524
<i>Rishabh Chhillar, Hardik Agarwal, Subhash Chand Gupta</i>	
Development of a System for Ensuring Humidity in Sport Complexes .....	530
<i>Mainura Murzamadiyeva, Arslan Ivashov, Bakhytzhhan Omarov, Bauyrzhan Omarov, Balnur Kendzhayeva, Rustam Abdrakhmanov</i>	
Smart Lighting and Switching Using Internet of Things.....	536
<i>Pradyumna Kumar, Piyush Rai, H. B. Yadav</i>	
Blockchain-Centric Resource Management System for Disaster Response and Relief .....	540
<i>Vinayak G. Bhat, H. P. Pranaav, S. Mini, Deepak Tosh</i>	
A Comparative Analysis of Important Energy Conservation Approaches in IoT .....	546
<i>Ankita Sindhu, Nihar Ranjan Roy</i>	
Computer Vision and Iot Based Smart System for Visually Impaired People.....	552
<i>Sneha Rao, Vishwa Mohan Singh</i>	
User Specific Automated IOT Enabled Laptop Brightness Controller.....	557
<i>Sahil Malhotra, Mili Bhardwaj, Geraldine Bessie Amali</i>	
Social Distancing Using Bluetooth Low Energy to Prevent the Spread of COVID-19.....	563
<i>Satyam Kumar, Vikas Gautam, Amit Kumar, Puja Kumari</i>	
A Machine Learning Implementation for Mental Health Care. Application: Smart Watch for Depression Detection.....	568
<i>Piyush Kumar, Rishi Chauhan, Thompson Stephan, Achyut Shankar, Sanjeev Thakur</i>	
Blockchain Enabled Ambient Assisted Living for Critically Ill Patients.....	575
<i>Vibha Nehra, Udit Rungta, Basudha Choudhury</i>	



ECG Signal Analysis Using Emerging Tools in Current Scenario of Health Informatics .....	582
<i>Varun Gupta, Yatender Chaturvedi, Nitin Kumar Saxena, Arvind Kumar Sharma, Salim, Vaishali Gupta</i>	
A Review on Recent Intrusion Detection Systems and Intrusion Prevention Systems in IoT .....	588
<i>Priteshkumar Prajapati, Bhumika Bhatt, Gautam Zalavadiya, Madhav Ajwalia, Parth Shah</i>	
AlignPIN: Indirect PIN Selection for Protection Against Repeated Shoulder Surfing .....	594
<i>Shreyans Jain, Shristi Dabola, Shikhar Binjola, Rajni Jindal</i>	
The Geo-Spatial Distribution of Targeted Attacks Sources Using HoneyPot Networks.....	600
<i>S. Shyla, Vishal Bhatnagar</i>	
A UWB-X Band with Three Notched Filters Inheriting High Isolation 2×2 MIMO Antenna Designed for High Speed Wireless Applications .....	605
<i>Manish Sharma, Rakesh Ahuja, Mohd Junedul Haque</i>	
Parameter Estimation of Software Reliability Growth Models: A Comparison Between Grey Wolf Optimizer and Improved Grey Wolf Optimizer .....	611
<i>Abubakar Ahmad Musa, Sukairaj Hafiz Imam, Ankur Choudhary, Arun Prakash Agrawal</i>	
A Proposed Model of a Semi-Automated Sensor Actuator Resposcopy Analyzer for ‘covid-19’ Patients for Respiratory Distress Detection .....	618
<i>Pushan Kumar Dutta, Ahona Ghosh, Protyush De, Madjid Soltani</i>	
Optimal Placement of Distributed Generators for Maximum Savings Using PSO-SSA Optimization Algorithm .....	624
<i>Rafi Vempalle, P. K. Dhal</i>	
Comparative Analysis of Mobility Based DEEC Protocol to Optimize the Efficiency in Wireless Sensor Networks.....	630
<i>Neha, Banita</i>	
Generating the Appropriate Route for the Detection of Data Congestion in VANETs Using a Clustering Approach .....	636
<i>Tarandeep Kaur Bhatia, Ramkumar Ketti Ramachandran, Robin Doss, Lei Pan</i>	
Stacked Autoencoder Based Intrusion Detection System Using One-Class Classification .....	643
<i>Prabhav Gupta, Yash Ghatole, Nihal Reddy</i>	
A Whale Optimization (WOA): Meta-Heuristic Based Energy Improvement Clustering in Wireless Sensor Networks.....	649
<i>Biswa Mohan Sahoo, Hari Mohan Pandey, Tarachand Amgoth</i>	
Social Network Measures Association with Social and Intelligent Behaviors in Dolphin Network .....	655
<i>Sangita Garg, Tapan K. Gandhi, B. K. Panigrahi</i>	
Detection of Stealthy Cyber Intrusion in Smart Electric Grid Using Advanced State Estimation .....	660
<i>Mahshooq Abdul Majeed, Neeraj Kumar Singh, Lalit Tak, Vasundhara Mahajan</i>	
Establishing Inter-Vehicle Communication Using Simulation Tools .....	666
<i>Piyush Kathuria, Priyanshu Adhikari, Pratyancha Bhardwaj, Fardeen Khan, Renuka Nagpal, Deepti Mehrotra</i>	
Security-Enhanced SDN Controller Based Kerberos Authentication Protocol .....	672
<i>Hamza Mutaheer, Pradeep Kumar</i>	

Statistical Computation of Harvested Energy for Nano Sensor Network.....	678
<i>Rajneesh Kumar Singh, S. Pratap Singh, Shailesh Tiwari</i>	
DLSDN: Deep Learning for DDOS Attack Detection in Software Defined Networking.....	683
<i>Nisha Ahuja, Gaurav Singal, Debajyoti Mukhopadhyay</i>	
Packet Error Rate Computation of Wireless Nanosensor Networks Under Relaying for Plant Scenarios .....	689
<i>Rajneesh Kumar Singh, S. Pratap Singh, Shailesh Tiwari</i>	
The Economic and Technical Factors During Coronavirus Pandemic in Affected Countries .....	694
<i>Tushar Tanmay, Akanksha Bhardwaj, Shilpi Sharma</i>	
Heralding the Future of Federated Learning Framework: Architecture, Tools and Future Directions .....	698
<i>Saneev Kumar Das, Sujit Beborita</i>	
Sentimental Analysis of Twitter Comments on Covid-19 .....	704
<i>Supriya Raheja, Anjani Asthana</i>	
Classification of Pediatric Pneumonia Prediction Approaches.....	709
<i>Arushi Singh, Shalini Shalini, Rakesh Garg</i>	
Analysis of Ensemble Learning Models for Identifying Spam Over Social Networks Using Recursive Feature Elimination .....	713
<i>Puneet Garg, Shailendra Narayan Singh</i>	
Gender and Age Detection Using Deep Learning .....	719
<i>Aryan Saxena, Prabhangad Singh, Shailendra Narayan Singh</i>	
Predicting Bridge Damage During Earthquake Using Machine Learning Algorithms.....	725
<i>Yash Garg, Arpit Masih, Utkarsh Sharma</i>	
Systematic Cardiovascular Health Analysis of Rural and Urban Residents for Early Prediction of Cardiac Ailments .....	729
<i>Anurag Bhatt, Sanjay Kumar Dubey, Ashutosh Kumar Bhatt</i>	
Real Time Object Detection with Audio Feedback Using Yolo Vs. Yolo_v3 .....	734
<i>Mansi Mahendru, Sanjay Kumar Dubey</i>	
Analysis of Online Grocery Recommendation Systems.....	741
<i>Lamiyah Khattar, Geetika Munjal</i>	
Implementation of Support Vector Machines Algorithm Through R-Language for Diabetes Database Testing.....	746
<i>Mohammed Sanghar, Vinod Kumar Shukla, Amit Verma, Purushottam Sharma</i>	
Study of Machine Learning Techniques for Plant Disease Recognition in Agriculture .....	752
<i>Pallavi Dwivedi, Sumit Kumar, Surbhi Viji, Yatender Chaturvedi</i>	
Feature Extraction from EEG Signals: A Deep Learning Perspective.....	757
<i>Awwab Mohammad, Farheen Siddiqui, M. Afshar Alam</i>	
ECCNet: An Ensemble of Compact Convolution Neural Network for Pain Severity Assessment from Face Images .....	761
<i>Ashish Semwal, Narendra D. Londhe</i>	

Features Extraction for Classification of Brain Tumor MRI Images Using Support Vector Machine.....	767
<i>M. Shahajad, Deepak Gambhir, Rashmi Gandhi</i>	
Face Detection and Recognition for Criminal Identification System .....	773
<i>Sanika Tanmay Ratnaparkhi, Aamani Tandasi, Shipra Saraswat</i>	
Effect of Various Factors in Context of Feature Selection on Opinion Spam Detection .....	778
<i>Ajay Rastogi, Monica Mehrotra, Syed Shafat Ali</i>	
Sentiment Analysis for Twitter Data in the Hindi Language .....	784
<i>Anjum Madan, Udayan Ghose</i>	
A Novel Approach of Load Balancing in Content Delivery Networks by Optimizing the Surrogate Server .....	790
<i>Pulkit Varshney, Sanchit Gaur, Satya Pal</i>	
Transfer Learning with Res2Net for Remote Sensing Scene Classification.....	796
<i>Arijit Das, Saravanan Chandran</i>	
Forecasting with Recurrent Neural Network in Intermittent Demand Data .....	802
<i>Amri Muhaimin, Dedy Dwi Prastyo, Henry Horng-Shing Lu</i>	
Evaluation of Machine Learning Algorithms for the Detection of Fake Bank Currency .....	810
<i>Anju Yadav, Tarun Jain, Vivek Kumar Verma, Vipin Pal</i>	
Automation of Prediction Method for Supervised Learning .....	816
<i>Brijendra Singh, Rashi Jaiswal</i>	
Comparison Study of Regression Models for the Prediction of post-Graduation Admissions Using Machine Learning Techniques.....	822
<i>Naveen S. Sapare, Sahana M. Beelagi</i>	
An Optimized Extreme Learning Machine Algorithm for Improving Software Maintainability Prediction .....	829
<i>Shikha Gupta, Anuradha Chug</i>	
Early Prediction of Sepsis Using Machine Learning.....	837
<i>Anuraag Shankar, Mufaddal Diwan, Snigdha Singh, Husain Nahrpurawala, Tanusri Bhowmick</i>	
Detection of Heartbeat Abnormalities from Phonocardiography Using Machine Learning.....	843
<i>Batyrkhan Omarov, Khaled Gamry, Aidar Batyrbekov, Zhanna Alimzhanova, Zhamila Dautytova, Gulzhan Seitbekova</i>	
A Multi-Criteria Decision-Making Approach for Selection of Brand Ambassadors Using Machine Learning Algorithm .....	848
<i>Siva Shanmugam, Isha Padmanaban</i>	
Deep Learning-Based Computer-Aided Diagnosis Tool for Brain Tumor Classification .....	854
<i>Sakshi Ahuja, B. K. Panigrahi, Tapan Gandhi, Utkarsh Gautam</i>	
COVID-19 Prediction Using ARIMA Model.....	860
<i>Venkatbharat Poleneni, Jahnvi K Rao, Syed Afshana Hidayathulla</i>	
Stock Forecasting for Time Series Data Using Convolutional Neural Network .....	866
<i>Surbhi Vijh, Adesh Kumar Pandey, Garima Vijh, Sumit Kumar</i>	

Feature Ranking and Aggregation for Bug Triaging in Open-Source Issue Tracking Systems .....	871
<i>Anjali Goyal, Neetu Sardana</i>	
Analysis of Financial Time Series Forecasting Using Deep Learning Model .....	877
<i>Raghavendra Kumar, Pardeep Kumar, Yugal Kumar</i>	
Comparison of Machine Learning Algorithms for Tumor Detection in Breast Microwave Imaging .....	882
<i>Priyam Patel, Anant Raina</i>	
Lexicon a Linguistic Approach for Sentiment Classification .....	887
<i>Ankita Sharma, Udayan Ghose</i>	
Recognizing Massive Mobile Traffic Patterns to Understand Urban Dynamics .....	894
<i>Akanksha Yadav, Harmit Singh, Shuchi Mala, Achyut Shankar</i>	
COVID-19 in India: Lockdown Analysis and Future Predictions Using Regression Models .....	899
<i>K. Prathyusha, K. Helini, C. V. Raghavendran, N. S. L. Kumar Kurumeti</i>	
Fake News Detection and Analysis Using Multitask Learning with BiLSTM CapsNet Model.....	905
<i>Sashank Sridhar, Sowmya Sanagavarapu</i>	
Classification and Prioritisation of Software Requirements Using Machine Learning – A Systematic Review.....	912
<i>Pratvina Talele, Rashmi Phalnikar</i>	
Prediction of Pneumonia Disease of Newborn Baby Based on Statistical Analysis of Maternal Condition Using Machine Learning Approach.....	919
<i>M. Mehedi Hasan, M. Omar Faruk, Bidesh Biswas Biki, M. Riajuliislam, Khairul Alam, Syeda Farjana Shetu</i>	
Machine Learning Based Improved Malware Detection Schemes .....	925
<i>Pradosh Priyadarshan, Prateek Sarangi, Adyasha Rath, Ganapati Panda</i>	
A Comparative Evaluation of Traditional Machine Learning and Deep Learning Classification Techniques for Sentiment Analysis .....	932
<i>Kaushik Dhola, Mann Saradva</i>	
Intelligent Chatbot for Prediction and Management of Stress .....	937
<i>Tushar Sharma, Jitendra Parihar, Saurabh Singh</i>	
Machine Learning for Anonymous Traffic Detection and Classification .....	942
<i>K. M. Akshobhya</i>	
Non-Invasive Diabetes Mellitus Detection System Using Machine Learning Techniques .....	948
<i>Anju Prabha, Jyoti Yadav, Asha Rani, Vijander Singh</i>	
Machine Learning Approach Based on Hybrid Features for Detection of Phishing URLs .....	954
<i>Awishkar Ghimire, Avinash Kumar Jha, Surendrabikram Thapa, Sushruti Mishra, Aryan Mani Jha</i>	
Computational Analysis of Machine Learning Algorithms to Predict Heart Disease.....	960
<i>Kunal Rao, Pawan Raj Gopal, Kusum Lata</i>	
A Study on Machine Learning Applied to Software Bug Priority Prediction.....	965
<i>Ruchika Malhotra, Ajay Dabas, A. S. Hariharasudhan, Manish Pant</i>	

A Comprehensive Survey on Effective Feature Selection Approaches for Text Sentiment Classification Process.....	971
<i>Abha Kiran Rajpoot, Parma Nand, Ali Imam Abidi</i>	
Organ Risk Prediction for Parkinson’s Disease Using Deep Learning Techniques.....	978
<i>Sandali Raizada, Yashita Verma, Shuchi Mala, Achyut Shankar, Sanjeev Thakur</i>	
Sentiment Analysis Using Language Models: A Study .....	984
<i>Spraha Kumawat, Inna Yadav, Nisha Pahal, Deepti Goel</i>	
Analysis and Prediction of COVID-19 Using Regression Models and Time Series Forecasting.....	989
<i>Saud Shaikh, Jaini Gala, Aishita Jain, Sunny Advani, Sagar Jaidhara, Mani Roja Edinburgh</i>	
A Behavioral Study on the Factors Influencing Selection of Restaurants Online During COVID-19 Using Multivariate Statistical Analysis .....	996
<i>Siva Shanmugam, S. Sri Krishnan, Deepa Ittimani Tholath</i>	
Comparative Analysis of Soil Properties to Predict Fertility and Crop Yield Using Machine Learning Algorithms.....	1004
<i>Pranay Malik, Sushmita Sengupta, Jitendra Singh Jadon</i>	
Drowsiness Detection Using Behavioral-Centered technique-A Review .....	1008
<i>Anjali Awasthi, Parma Nand, Manish Verma, Rani Astya</i>	
Regression Analysis and Future Forecasting of COVID-19 Using Machine Learnings Algorithm .....	1014
<i>Saksham Gera, M. Mridul, Kireet Joshi</i>	
Comparative Analysis of Supervised Models for Diamond Price Prediction .....	1019
<i>Garima Sharma, Vikas Tripathi, Manish Mahajan, Awadhesh Kumar Srivastava</i>	
Multiclass Classification for Predicting Remaining Useful Life (RUL) of the Turbofan Engine .....	1023
<i>Piyush Soni, Mohd Anas Khan, Mohammad Zubair, Suresh Kumar Garg</i>	
Robust Graph Based Deep Anomaly Detection on Attributed Networks .....	1029
<i>G. Victor Daniel, M. Venkatesan</i>	
Financial Analytics: Investment Behavior of Middle Income Group in South India.....	1034
<i>Megha Mohan, Kamaladevi Baskaran</i>	
A Review on Statistical Importance and Biomarkers Identification in Hashimoto Thyroiditis Disease .....	1040
<i>Sundar Santhoshkumar, Uma Ramasamy, Romany F. Mansuour, E. Ramaraj</i>	
Role of IT in Service Sector, the Case of Hesil Technologies Company.....	1046
<i>Abdul Moid Mohamed, Ibrahim Alotaibi</i>	
Estimation of Stability and Control Derivatives Using Simulated Flight Data .....	1051
<i>Muskan Goel, Rajoshi Sarkar, S. Singh</i>	
Analyzing and Forecasting COVID-19 Outbreak in India .....	1059
<i>Shreyansh Chordia, Yogini Pawar</i>	
Decision Making in Intraday Index Options Trading: A Parametric Approach .....	1067
<i>Rakesh Kumar Maurya, Piyush Rai, H. B. Yadav</i>	
Social Media Marketing - An Effective Solution for Non-Profit Organizations .....	1072
<i>Anupam Mehrotra, Sobia Siraj</i>	

Support Vector Based Oversampling Technique for Handling Class Imbalance in Software Defect Prediction .....	1078
<i>Ruchika Malhotra, Vaibhav Agrawal, Vedansh Pal, Tushar Agarwal</i>	
Accounting Disclosure : Impact on Equity Share Investment – An Evidence Based Analysis .....	1084
<i>Ganga Bhavani, Swapna Nair, Suchi Dubey, Doreen Chiwundra</i>	
COVID-19 Outbreak: An Epidemic Analysis Using Time Series Prediction Model.....	1090
<i>Raghavendra Kumar, Anjali Jain, Arun Kumar Tripathi, Shaifali Tyagi</i>	
Statistical Comparison of COVID-19 Infections Based Upon the Food Habits/Diets in Countries Using RStudio .....	1095
<i>Rohan Ramachandran, Velan S. Senthil, Daifa Imtiyaz Wadekar</i>	

**Author Index**