Mayank Singh · P. K. Gupta ·
Vipin Tyagi · Jan Flusser ·
Tuncer Ören · Rekha Kashyap (Eds.)

Communications in Computer and Information Science 1046

# Advances in Computing and Data Sciences

Third International Conference, ICACDS 2019
Ghaziabad, India, April 12–13, 2019
Revised Selected Papers, Part II

## Part 2

Springer

Mayank Singh · P. K. Gupta ·
Vipin Tyagi · Jan Flusser ·
Tuncer Ören · Rekha Kashyap (Eds.)

# Advances in Computing and Data Sciences

## Third International Conference, ICACDS 2019
## Ghaziabad, India, April 12–13, 2019
## Revised Selected Papers, Part II

Learning Resource Center
JUIT PUBLICATION
JUIT, Waknaghat, Solan (H.P.)

Springer

*Editors*
Mayank Singh
University of KwaZulu-Natal
Durban, South Africa

Vipin Tyagi
Department of Computer Science
and Engineering
Jaypee University of Engineering
and Technology
Guna, Madhya Pradesh, India

Tuncer Ören
School of Electrical Engineering
and Computer Science
University of Ottawa
Ottawa, ON, Canada

P. K. Gupta
Computer Science and Engineering
Jaypee Institute of Information
Technology
Waknaghat, Himachal Pradesh, India

Jan Flusser
ÚTIA AV ČR
Institute of Information Theory
and Automation
Prague 8, Praha, Czech Republic

Rekha Kashyap
CSE Department
Inderprastha Engineering College
Ghaziabad, Uttar Pradesh, India

ISSN 1865-0929 ISSN 1865-0937 (electronic)
Communications in Computer and Information Science
ISBN 978-981-13-9941-1 ISBN 978-981-13-9942-8 (eBook)
https://doi.org/10.1007/978-981-13-9942-8

© Springer Nature Singapore Pte Ltd. 2019
This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.
The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.
The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, expressed or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

This Springer imprint is published by the registered company Springer Nature Singapore Pte Ltd.
The registered company address is: 152 Beach Road, #21-01/04 Gateway East, Singapore 189721, Singapore

# Organization

## Steering Committee

### Chief Patron

| | |
|---|---|
| Vinay Kumar Pathak (Vice-chancellor) | APJAKTU, Lucknow, India |
| S. S. Jain (Chairman) | Inderprastha Engineering College, Ghaziabad, India |

### Patron

| | |
|---|---|
| B. C. Sharma (Director) | Inderprastha Engineering College, Ghaziabad, India |

### Steering Committee

| | |
|---|---|
| Alexandre Carlos Brandão Ramos | UNIFEI, Brazil |
| Mohit Singh | Georgia Institute of Technology, USA |
| H. M. Pandey | Edge Hill University, UK |
| M. N. Hooda | BVICAM, Delhi, India |
| S. K. Singh | IIT BHU, Varanasi, India |
| Jyotsna Kumar Mandal | University of Kalyani, West Bengal, India |

### Honorary Chairs

| | |
|---|---|
| Viranjay M. Srivastava | University of KwaZulu-Natal, Durban, South Africa |
| V. K. Singh | Inderprastha Engineering College, Ghaziabad, India |

### General Chairs

| | |
|---|---|
| Mayank Singh | University of KwaZulu Natal, Durban, South Africa |
| Rekha Kashyap | Inderprastha Engineering College, Ghaziabad, India |

### Advisory Board Chairs

| | |
|---|---|
| Tuncer Ören | University of Ottawa, Canada |
| Jan Flusser | Institute of Information Theory and Automation, Czech Republic |

### Technical Program Committee Chairs

| | |
|---|---|
| P. K. Gupta | Jaypee University of Information Technology, Solan, India |
| Vipin Tyagi | Jaypee University of Engineering & Technology, Guna, India |

**Program Chairs**

| | |
|---|---|
| Ulrick Klauck | Aalen University, Germany |
| Shailendra Mishra | Majmaah University, Saudi Arabia |

**Conveners**

| | |
|---|---|
| Gaurav Agrawal | Inderprastha Engineering College, India |
| Sandhya Tarar | Gautam Buddha University, India |

**Co-conveners**

| | |
|---|---|
| Prathamesh Churi | NMIMS University, India |
| Shikha Badhani | DU, India |

**Conference Chairs**

| | |
|---|---|
| Ravi Tomar | University of Petroleum and Energy Studies, India |
| Jagendra Singh | Inderprastha Engineering College, India |

**Conference Co-chairs**

| | |
|---|---|
| Lavanya Sharma | Amity University, India |
| Vibhash Yadav | Rajkiya Engineering College Banda, India |
| Rakesh Saini | DIT University, India |
| Abhishek Dixit | Tallinn University of Technology, Estonia |
| Vipin Deval | Tallinn University of Technology, Estonia |

**Organizing Chairs**

| | |
|---|---|
| Pooja Tripathi | Inderprastha Engineering College, India |
| Mandeep Katre | Inderprastha Engineering College, India |

**Organizing Secretariat**

| | |
|---|---|
| Chahat Sharma | Inderprastha Engineering College, India |
| Krista Chaudhary | Krishna Engineering College, Ghaziabad, India |
| Umang Kant | Krishna Engineering College, Ghaziabad, India |

**Creative Head**

| | |
|---|---|
| Deepak Singh | Consilio Intelligence Research Lab, India |

**Marketing Head**

| | |
|---|---|
| Akshay Chaudhary | GISR Foundation, India |

## Organizing Committee

### Registration

| | |
|---|---|
| Tripti Sharma | Inderprastha Engineering College, India |
| Amrita Bhatnagar | Inderprastha Engineering College, India |
| Kirti Jain | Inderprastha Engineering College, India |
| Harshita | Inderprastha Engineering College, India |

### Publication

| | |
|---|---|
| Jagendra Singh | Inderprastha Engineering College, India |

### Cultural

| | |
|---|---|
| Diksha Dani | Inderprastha Engineering College, India |
| Anjali Singhal | Inderprastha Engineering College, India |
| Nidhi Agrawal | Inderprastha Engineering College, India |
| Prachi | Inderprastha Engineering College, India |

### Transportation

| | |
|---|---|
| Mandeep Katre | Inderprastha Engineering College, India |
| Pushendra Singh | Inderprastha Engineering College, India |
| Shailendra Singh | Inderprastha Engineering College, India |
| Alok Katiyar | Inderprastha Engineering College, India |
| Sandeep Agrawal | Inderprastha Engineering College, India |

### Hospitality

| | |
|---|---|
| Neeta Verma | Inderprastha Engineering College, India |
| Gaurav Srivastava | Inderprastha Engineering College, India |
| Vanshika Gupta | Inderprastha Engineering College, India |
| Udit Bansal | Inderprastha Engineering College, India |

### Stage Management

| | |
|---|---|
| Sweeta Bansal | Inderprastha Engineering College, India |
| Chahat Sharma | Inderprastha Engineering College, India |
| Anchal Jain | Inderprastha Engineering College, India |

### Technical Session

| | |
|---|---|
| Pranshu Saxena | Inderprastha Engineering College, India |
| Anjali Singhal | Inderprastha Engineering College, India |
| Diksha Dani | Inderprastha Engineering College, India |
| Alka Singhal | Inderprastha Engineering College, India |
| Jagendra Singh | Inderprastha Engineering College, India |
| Sneh Prabha | Inderprastha Engineering College, India |
| Pooja Singhal | Inderprastha Engineering College, India |

| | |
|---|---|
| Shweta Chaku | Inderprastha Engineering College, India |
| Naman Sharma | Inderprastha Engineering College, India |
| Preeti | Inderprastha Engineering College, India |
| Kumud Alok | Inderprastha Engineering College, India |

**Finance**

| | |
|---|---|
| Gaurav Agrawal | Inderprastha Engineering College, India |
| Mandeep Katre | Inderprastha Engineering College, India |
| Amit Sharma | Inderprastha Engineering College, India |
| Vipin Kumar Singhal | Inderprastha Engineering College, India |

**Food**

| | |
|---|---|
| Archana Agrawal | Inderprastha Engineering College, India |
| Harendra Singh | Inderprastha Engineering College, India |
| Swapna Singh | Inderprastha Engineering College, India |
| Shraddha Srivastava | Inderprastha Engineering College, India |
| Shiva Soni | Inderprastha Engineering College, India |

**Advertising**

| | |
|---|---|
| Monika Bansal | Inderprastha Engineering College, India |
| Shelly Gupta | Inderprastha Engineering College, India |
| Kamna Singh | Inderprastha Engineering College, India |

**Press and Media**

| | |
|---|---|
| Monika Bansal | Inderprastha Engineering College, India |
| Chahat Sharma | Inderprastha Engineering College, India |
| Bharti | Inderprastha Engineering College, India |

**Editorial**

| | |
|---|---|
| Pranshu Saxena | Inderprastha Engineering College, India |

## Sponsored by

Consilio Intelligence Research Lab

## Co-sponsored by

GISR Foundation
IP Moment
Print Canvas
VGeekers
Tricky Plants

# Contents – Part II

**Advanced Computing**


A Face Detection Using Support Vector Machine: Challenging Issues, Recent Trend, Solutions and Proposed Framework . . . . . 3
*Suraj Makkar and Lavanya Sharma*

Empirical Study of Test Driven Development with Scrum . . . . . 13
*Vikas Aggarwal and Anjali Singhal*

Microprocessor Based Edge Computing for an Internet of Things (IoT) Enabled Distributed Motion Control . . . . . 22
*Wasim Ghder Soliman and D. V. Rama Koti Reddy*

Cyber Threat Analysis of Consumer Devices . . . . . 32
*Hemant Gupta and Mayank Singh*

Recognition of Hand Gestures and Conversion of Voice for Betterment of Deaf and Mute People . . . . . 46
*Shubham Kr. Mishra, Sheona Sinha, Sourabh Sinha, and Saurabh Bilgaiyan*

General Outlook of Wireless Body Area Sensor Networks . . . . . 58
*Sharmila, Dhananjay Kumar, KumKum Som, Pramod Kumar, and Krista Chaudhary*

Hybrid Fuzzy C-Means Using Bat Optimization and Maxi-Min Distance Classifier. . . . . 68
*Rahul Kumar, Rajesh Dwivedi, and Ebenezer Jangam*

Network Motifs: A Survey . . . . . 80
*Deepali Jain and Ripon Patgiri*

Multiple Image Watermarking for Efficient Storage and Transmission of Medical Images . . . . . 92
*Rakhshan Anjum, Priyanka Verma, and Sunanda Verma*

Empirical Analysis of Defects in Handheld Device Applications . . . . . 103
*Mamta Pandey, Ratnesh Litoriya, and Prateek Pandey*

Lexical Text Simplification Using WordNet . . . . . 114
*Debabrata Swain, Mrunmayee Tambe, Preeti Ballal, Vishal Dolase, Kajol Agrawal, and Yogesh Rajmane*

Analysis and Impact of Trust and Recommendation in Social Network Based Algorithm for Delay Tolerant Network . . . . . 123
*Abhilasha Rangra, Vivek Kumar Sehgal, and Shailendra Shukla*

Formation of Hierarchies in the System of Organization of State Construction Supervision in Case of Reorientation of Urban Areas . . . . . 134
*Dmitriy Topchiy and Andrey Tokarskiy*

Customized Visualization of Email Using Sentimental and Impact Analysis in R . . . . . 144
*V. Roopa and K. Induja*

Role of Lexical and Syntactic Fixedness in Acquisition of Hindi MWEs . . . . 155
*Rakhi Joon and Archana Singhal*

Five Input Multilayer Full Adder by QCA Designer . . . . . 164
*D. Naveen Sai, G. Surya Kranth, Damarla Paradhasaradhi, R. S. Ernest Ravindran, M. Lakshmana Kumar, and K. Mariya Priyadarshini*

Effect of Vaccination in the Computer Network for Distributed Attacks – A Dynamic Model . . . . . 175
*Yerra Shankar Rao, Hemraj Saini, Geetanjali Rathee, and Tarini Charan Panda*

Ransomware Analysis Using Reverse Engineering. . . . . 185
*S. Naveen and T. Gireesh Kumar*

Semantic Textual Similarity and Factorization Machine Model for Retrieval of Question-Answering . . . . . 195
*Nivid Limbasiya and Prateek Agrawal*

Krisha: An Interactive Mobile Application for Autism Children . . . . . 207
*Amrita Tulshan and Nataasha Raul*

Advanced Spatial Reutilization for Finding Ideal Path in Wireless Sensor Networks. . . . . 219
*A. Basi Reddy, P. Liyaz, B. Surendra Reddy, K. Manoj Kumar, and K. Sathish*

An Efficient Preprocessing Step for Retinal Vessel Segmentation via Optic Nerve Head Exclusion . . . . . 228
*Farha Fatina Wahid and G. Raju*

An Upper Bound for Sorting $R_n$ with LE. . . . . 240
*Sai Satwik Kuppili, Bhadrachalam Chitturi, and T. Srinath*

Image Filtering with Iterative Wavelet Transform Based Compression . . . . . 250
*Vikas Mahor, Srishti Agrawal, and Rekha Gupta*

Multiresolution Satellite Fusion Method for INSAT Images . . . . . 263
*B. Bharathidasan and G. Thirugnanam*

A Combinatorial Fair Economical Double Auction Resource Allocation Model . . . . . 272
*Ritu Singhal and Archana Singhal*

Issues in Training a Convolutional Neural Network Model for Image Classification . . . . . 282
*Soumya Joshi, Dhirendra Kumar Verma, Gaurav Saxena, and Amit Paraye*

An Approach to Find Proper Execution Parameters of n-Gram Encoding Method Based on Protein Sequence Classification . . . . . 294
*Suprativ Saha and Tanmay Bhattacharya*

Hyperglycemia Prediction Using Machine Learning: A Probabilistic Approach . . . . . 304
*Vishwas Agrawal, Pushpa Singh, and Sweta Sneha*

Text Caption Generation Based on Lip Movement of Speaker in Video Using Neural Network . . . . . 313
*Dipti Pawade, Avani Sakhapara, Chaitya Shah, Jigar Wala, Ankitmani Tripathi, and Bhavikk Shah*

Legendre Wavelet Quasilinearization Method for Nonlinear Klein-Gordon Equation with Initial Conditions . . . . . 323
*Kotapally Harish Kumar*

Runtime Verification and Vulnerability Testing of Smart Contracts . . . . . 333
*Misha Abraham and K. P. Jevitha*

A Smart Embedded System Model for the AC Automation with Temperature Prediction . . . . . 343
*F. M. Javed Mehedi Shamrat, Shaikh Muhammad Allayear, Md. Farhad Alam, Md. Ismail Jabiullah, and Razu Ahmed*

Rough-Set Based Hotspot Detection in Spatial Data . . . . . 356
*Mohd Shamsh Tabarej and Sonajharia Minz*

DDoS Attack Detection and Clustering of Attacked and Non-attacked VMs Using SOM in Cloud Network . . . . . 369
*Nitesh Bharot, Veenadhari Suraparaju, and Sanjeev Gupta*

An Efficient Knowledge-Based Text Pre-processing Approach for Twitter and Google+ . . . . . 379
*Tripti Agrawal and Archana Singhal*

Drought Prediction and River Network Optimization in Maharashtra Region . . . . . 390
*Sakshi Subedi, Krutika Pasalkar, Girisha Navani, Saili Kadam, and Priya Raghavan Nair Lalitha*

Classifying Question Papers with Bloom's Taxonomy Using Machine Learning Techniques . . . . . 399
*Minni Jain, Rohit Beniwal, Aheli Ghosh, Tanish Grover, and Utkarsh Tyagi*

Polynomial Topic Distribution with Topic Modeling for Generic Labeling . . . 409
*Syeda Sumbul Hossain, Md. Rezwan Ul-Hassan, and Shadikur Rahman*

Comparative Performance of Machine Learning Algorithms for Fake News Detection . . . . . 420
*Arvinder Pal Singh Bali, Mexson Fernandes, Sourabh Choubey, and Mahima Goel*

Pedestrian Intention Detection Using Faster RCNN and SSD . . . . . 431
*Debapriyo Roy Chowdhury, Priya Garg, and Vidya N. More*

Implementation of Smart Legal Assistance System in Accordance with the Indian Penal Code Using Similarity Measures . . . . . 440
*Dipti Pawade, Avani Sakhapara, Hussain Ratlamwala, Siddharth Mishra, Samreen Shaikh, and Dhrumil Mehta*

A Review on Facial Expression Based Behavioral Analysis Using Computational Technique for Autistic Disorder Patients . . . . . 450
*Camellia Ray, Hrudaya Kumar Tripathy, and Sushruta Mishra*

Smart Learning System Based on EEG Signals . . . . . 465
*Aaditya Sharma, Swadha Gupta, Sawinder Kaur, and Parteek Kumar*

Optical Character and Font Recognizer . . . . . 477
*Manan Rajdev, Diksha Sahay, Shambhavi Khare, and Sumita Nainan*

Association Rule Mining for Customer Segmentation in the SMEs Sector Using the Apriori Algorithm . . . . . 487
*Jesús Silva, Mercedes Gaitan Angulo, Danelys Cabrera, Sadhana J. Kamatkar, Hugo Martínez Caraballo, Jairo Martinez Ventura, John Anderson Virviescas Peña, and Juan de la Hoz – Hernandez*

Recommendation of an Integrated Index for the Quality of Educational Services Using Multivariate Statistics. . . . . 498
*Omar Bonerge Pineda Lezama, Rafael Luciano Gómez Dorta, Noel Varela Izquierdo, Jesús Silva, and Sadhana J. Kamatkar*

Windows Based Interactive Application to Replicate Artworks in Virtual Environment . . . . . 509
*Apurba Ghosh, Anindya Ghosh, and Jia Uddin*

Enhanced Bag-of-Features Method Using Grey Wolf Optimization for Automated Face Retrieval . . . . . 519
*Arun Kumar Shukla and Suvendu Kanungo*

A Context-Aware Approach to Enhance Service Utility for Location Privacy in Internet of Things . . . . . 529
*Shivangi Shukla and Sankita J. Patel*

Cyberbullying Detection in Hindi-English Code-Mixed Language Using Sentiment Classification . . . . . 543
*Shrikant Tarwani, Manan Jethanandani, and Vibhor Kant*

Effective Predictive Analytics and Modeling Based on Historical Data. . . . . 552
*Sheikh Mohammad Idrees, M. Afshar Alam, Parul Agarwal, and Lubna Ansari*

Efficient Ballot Casting in Ranked Based Voting System Using Homomorphic Encryption . . . . . 565
*Bhumika Patel, Purvi Tandel, and Slesha Sanghvi*

Topic Modelling with Fuzzy Document Representation . . . . . 577
*Nadeem Akhtar, M. M. Sufyan Beg, and Hira Javed*

Security Validation of Cloud Based Storage . . . . . 588
*Shruti Jaiswal and Daya Gupta*

A Literature Survey on Eye Corner Detection Techniques in Real-Life Scenarios . . . . . 597
*M. Zefree Lazarus, Supratim Gupta, and Nidhi Panda*

Prediction Studies of Landslides in the Mangan and Singtam Areas Triggered by 2011 Sikkim Earthquake . . . . . 609
*Aadityan Sridharan and Sundararaman Gopalan*

Quantitative Analysis of Feature Extraction Techniques for Isolated Word Recognition . . . . . 618
*Chesta Agarwal, Pinaki Chakraborty, Serena Barai, and Vaibhav Goyal*

Mathematical Analysis of Image Information Retained in the Complex Domain Phases Under Additive and Multiplicative Noise . . . . . 628
*Susant Kumar Panigrahi and Supratim Gupta*

Comparative Study of Segmentation Techniques Used for Optic Disc Segmentation . . . . . 643
*Shivesh Madhawa Shukla, Amit Kaul, and Ravinder Nath*

Next Generation Noise and Affine Invariant Video Watermarking Scheme Using Harris Feature Extraction . . . . . 655
*Himanshu Agarwal, Farooq Husain, and Praveen Saini*

Presentation Abstraction Control Architecture Pattern in Business Intelligence . . . . . 666
*Aksha Iyer, Sara Bali, Ishita Kumar, Prathamesh Churi, and Kamal Mistry*

Discriminative Gait Features Based on Signal Properties of Silhouette Centroids . . . . . 680
*K. Sugandhi and G. Raju*

An Algorithm for Prediction of Web User Navigation Pattern and Restructuring of Web Structure Based on Visitor's Web Access Pattern. . . . . 689
*Deepak Mangal, Saurabh Singhal, and Dilip Sharma*

Computational Representation of Paninian Rules of Sanskrit Grammar for Dictionary-Independent Machine Translation . . . . . 701
*Vishvajit Bakarola and Jitendra Nasriwala*

QoS Based Resource Provisioning in Cloud Computing Environment: A Technical Survey. . . . . 711
*Shefali Varshney, Rajinder Sandhu, and P. K. Gupta*

Optimizing Smart Parking System by Using Fog Computing . . . . . 724
*Righa Tandon and P. K. Gupta*

Formal-Verification of Smart-Contract Languages: A Survey . . . . . 738
*Vimal Dwivedi, Vipin Deval, Abhishek Dixit, and Alex Norta*

**Author Index** . . . . . 749

# Contents – Part I

**Data Sciences**


Comparative Analysis of Cognitive Neurodynamics on AMIGOS Dataset Versus Prepared Dataset . . . . . 3
*Rubleen Kaur, Rupali Gill, and Jaiteg Singh*

Business Forecasting in the Light of Statistical Approaches and Machine Learning Classifiers . . . . . 13
*Prasun Chakrabarti, Biswajit Satpathy, Siddhant Bane, Tulika Chakrabarti, Narendra S. Chaudhuri, and Pierluigi Siano*

Real Time Prediction of American Sign Language Using Convolutional Neural Networks . . . . . 22
*Shobhit Sinha, Siddhartha Singh, Sumanu Rawat, and Aman Chopra*

Hybridization of Fuzzy Min-Max Neural Networks with kNN for Enhanced Pattern Classification . . . . . 32
*Anil Kumar and P. S. V. S. Sai Prasad*

Individualized Patient-Centered Type 2 Diabetes Recommender System . . . . . 45
*Nishat Afreen, Shrey Singh, and Sanjay Kumar*

CAD Data Computing for Component Type Realization and Assembly Sequence Generation . . . . . 55
*Umeshchandra Mane, Venkatesh Jonnalagedda, and Balaji Dabade*

Methods to Distinguish Photorealistic Computer Generated Images from Photographic Images: A Review . . . . . 64
*Kunj Bihari Meena and Vipin Tyagi*

A Novel Approach for Automatic Diagnosis of Skin Carcinoma from Dermoscopic Images Using Parallel Deep Residual Networks . . . . . 83
*Rahul Sarkar, Chandra Churh Chatterjee, and Animesh Hazra*

Identification of Various Neurological Disorders Using EEG Signals . . . . . 95
*Aarti Sharma, J. K. Rai, and R. P. Tewari*

Neural Networks Based Cancer Classification Model Using CT-PET Fused Images . . . . . 104
*S. Srimathi, G. Yamuna, and R. Nanmaran*

A Deep Learning Approach to Speech Recognition of Digits . . . . . 117
*Gagan Gopinath, Joel Kiran Kumar, Nirmit Shetty, and S. S. Shylaja*

An Architecture for Analysis of Mobile Botnet Detection Using Machine Learning . . . . . 127
*Ashok Patade and Narendra Shekokar*

Thyroid Prediction Using Machine Learning Techniques . . . . . 140
*Sagar Raisinghani, Rahul Shamdasani, Mahima Motwani, Amit Bahreja, and Priya Raghavan Nair Lalitha*

An Iterative Scheme for a Class of Fractional Order Perturbed Differential Equations . . . . . 151
*Rupsha Roy and Kotapally Harish Kumar*

A Novel Algorithm to Compute Stable Groups in Signed Social Networks . . . . . 164
*Lakshmi Satya Vani Narayanam and Satish V. Motammanavar*

Deep Convolution Neural Network Based Denoiser for Mammographic Images . . . . . 177
*Gurprem Singh, Ajay Mittal, and Naveen Aggarwal*

Detection of Brain Tumor Using Machine Learning Approach . . . . . 188
*Chadha Megha and Jain Sushma*

Fuzzy Petri Net Representation of Fuzzy Production Propositions of a Rule Based System . . . . . 197
*Sakshi Gupta, Sunita Kumawat, and Gajendra Pratap Singh*

Fraud Detection in Medical Insurance Claim with Privacy Preserving Data Publishing in TLS-N Using Blockchain . . . . . 211
*Thanusree Mohan and K. Praveen*

MR Brain Image Tumor Classification via Kernel SVM with Different Preprocessing Techniques . . . . . 221
*Asmita Dixit and Aparajita Nanda*

Attribute-Based Deterministic Access Control Mechanism (AB-DACM) for Securing Communication in Internet of Smart Health Care Things . . . . . 231
*Ankur Lohachab and Ajay Jangra*

An Enhanced Genetic Virtual Machine Load Balancing Algorithm for Data Center . . . . . 244
*Mala Yadav and Jay Shankar Prasad*

A Study of Deep Learning Methods for Mitotic Cell Detection Towards Breast Cancer Diagnosis . . . . . 254
*S. Kaushik, S. Vijaya Raghavan, and B. Sivaselvan*

Hybrid Approaches for Brain Tumor Detection in MR Images . . . . . 264
*Prabhjot Kaur Chahal, Shreelekha Pandey, and Shivani Goel*

SeLF: A Deep Neural Network Based Multimodal Sequential Late Fusion Approach for Human Emotion Recognition . . . . . 275
*Anitha Modi and Priyanka Sharma*

Animal-Vehicle Collision Mitigation Using Deep Learning in Driver Assistance Systems . . . . . 284
*Mudit Goswami, V. Prem Prakash, and Dhruv Goswami*

Classification of Parkinson's Disease Using Various Machine Learning Techniques . . . . . 296
*Tamanna Sood and Padmavati Khandnor*

Detection of Malignant Melanoma Using Deep Learning . . . . . 312
*Savy Gulati and Rosepreet Kaur Bhogal*

SARPS: Sentiment Analysis of Review(S) Posted on Social Network . . . . . 326
*Sumedha and Rahul Johari*

Impact of Feature Extraction Techniques on a CBIR System . . . . . 338
*Ghanshyam Raghuwanshi and Vipin Tyagi*

Convolutional Feature Extraction and Neural Arithmetic Logic Units for Stock Prediction. . . . . 349
*Shangeth Rajaa and Jajati Keshari Sahoo*

VMProtector: Malign Process Detection for Protecting Virtual Machines in Cloud Environment . . . . . 360
*Preeti Mishra, Akash Negi, E. S. Pilli, and R. C. Joshi*

Comparative Analysis of Ensemble Methods for Classification of Android Malicious Applications . . . . . 370
*Meghna Dhalaria, Ekta Gandotra, and Suman Saha*

Risk Analysis for Long-Term Stock Market Trend Prediction . . . . . 381
*Rounak Bose, Amit Das, Jayanta Poray, and Supratim Bhattacharya*

Evaluating Accessibility and Usability of Airline Websites. . . . . 392
*Gaurav Agrawal, Devendra Kumar, Mayank Singh, and Diksha Dani*

Amazon Reviews as Corpus for Sentiment Analysis Using Machine Learning . . . . . 403
*Akhila Ravi, Akash Raj Khettry, and Sneha Yelandur Sethumadhavachar*

Blockchain for the Internet of Vehicles . . . . . 412
*R. Ramaguru, M. Sindhu, and M. Sethumadhavan*

Implementation of Smart Indoor Agriculture System and Predictive Analysis . . . . . 424
*Md. Salah Uddin, Md. Asaduzzaman, Rafia Farzana, Md. Samaun Hasan, Mizanur Rahman, and Shaikh Muhammad Allayear*

Data Dimensionality Reduction (DDR) Scheme for Intrusion Detection System Using Ensemble and Standalone Classifiers . . . . . 436
*Ashu Bansal and Sanmeet Kaur*

Short Term Forecasting of Agriculture Commodity Price by Using ARIMA: Based on Indian Market . . . . . 452
*Anil KumarMahto, Ranjit Biswas, and M. Afshar Alam*

Recent Research on Data Analytics Techniques for Internet of Things . . . . . 462
*Chetna Dabas*

Information Delivery System for Early Forest Fire Detection Using Internet of Things . . . . . 477
*Ravi Tomar, Rahul Tiwari, and Sarishma*

An Experimental Analysis of Similarity Measures Effect for Identification of Software Component Composition of Services Based on Use-Cases . . . . . 487
*Amit Kumar Srivastava and Shishir Kumar*

Quantitative Analysis of Drinking Water Quality for Long Term Water Borne Diseases . . . . . 500
*Kamidi Prasanth, Sabbi Vamshi Krishna, Sanniti Rama Krishna, and Kondapalli Jayaram Kumar*

**Author Index** . . . . . 509

**Communications in Computer and Information Science**

The CCIS series is devoted to the publication of peer-reviewed proceedings of conferences and workshops. Its aim is to efficiently disseminate original research results in computer science. All CCIS proceedings are available in electronic form from the SpringerLink digital library, and as printed books, and reach libraries and readers worldwide via Springer's distribution network.

Besides globally relevant meetings with internationally representative program committees guaranteeing a strict peer-reviewing and paper-selection process, conferences run by societies or of high regional or national relevance are also considered for publication. Application-oriented and interdisciplinary conferences are also welcome.

The topical scope of CCIS spans the entire spectrum of computer science ranging from foundational topics in the theory of computing to information and communications science and technology and a broad variety of interdisciplinary application fields.

CCIS proceedings can be published in time for distribution at conferences or as revised proceedings after the event. The publication is free of charge and an Open Access option is available at a fee. The language of publication is exclusively English.

CCIS is abstracted/indexed in DBLP, Google Scholar, EI-Compendex, Mathematical Reviews, SCImago, and Scopus. CCIS volumes are also submitted for inclusion in ISI Proceedings.

To start the evaluation of your proposal for inclusion in the CCIS series, please send an e-mail to ccis@springer.com.

ISSN 1865-0929

ISBN 978-981-13-9941-1

springer.com