

# Contents

<b>Part I Special Session: Advances in Nature Inspired Algorithms for Engineering Optimization Problems</b>	
<b>An Efficient Dynamic Scheduling Algorithm for Soft Real-Time Tasks in Multiprocessor System Using Hybrid Quantum-Inspired Genetic Algorithm . . . . .</b>	<b>3</b>
Debanjan Konar, Kalpana Sharma, Sri Raj Pradhan and Sital Sharma	
<b>Equitable Machine Learning Algorithms to Probe Over P2P Botnets . . . . .</b>	<b>13</b>
Pavani Bharathula and N. Mridula Menon	
<b>Directed Search-based PSO Algorithm and Its Application to Scheduling Independent Task in Multiprocessor Environment . . . . .</b>	<b>23</b>
Sneha Shriya, R.S. Sharma, Saurav Sumit and Sonu Choudhary	
<b>Part II Bioinformatics and Computational Biology</b>	
<b>JUPred_MLP: Prediction of Phosphorylation Sites Using a Consensus of MLP Classifiers. . . . .</b>	<b>35</b>
Sagnik Banerjee, Debjyoti Ghosh, Subhadip Basu and Mita Nasipuri	
<b>Molecular Computing and Residual Binding Mode in ER<math>\alpha</math> and bZIP Proteins from <i>Homo Sapiens</i>: An Insight into the Signal Transduction in Breast Cancer Metastasis . . . . .</b>	<b>43</b>
Arundhati Banerjee and Sujay Ray	
<b>SVM-Based Pre-microRNA Classifier Using Sequence, Structural, and Thermodynamic Parameters. . . . .</b>	<b>57</b>
K.A. Sumaira, A. Salim and S.S. Vinod Chandra	
<b>DCoSpect: A Novel Differentially Coexpressed Gene Module Detection Algorithm Using Spectral Clustering . . . . .</b>	<b>69</b>
Sumanta Ray, Sinchani Chakraborty and Anirban Mukhopadhyay	

<b>Intelligent Topological Differential Gene Networks . . . . .</b>	79
Mrityunjay Sarkar and Aurpan Majumder	
<b>Part III Signal Processing</b>	
<b>Impact of Threshold to Identify Vocal Tract. . . . .</b>	97
Soumen Kanrar	
<b>Application of Compressed Sensing in Cognitive Radio . . . . .</b>	107
Naveen Kumar and Neetu Sood	
<b>Compressed Sensing-Based NBI Mitigation in Ultra-WideBand Energy Detector . . . . .</b>	119
Priyanka G. Patil and Gajanan K. Birajdar	
<b>Part IV Data Mining</b>	
<b>A Novel Data Mining Scheme for Smartphone Activity Recognition by Accelerometer Sensor . . . . .</b>	131
Yajnaseni Dash, Sanjay Kumar and V.K. Patle	
<b>Mining and Ranking Association Rules in Support, Confidence, Correlation, and Dissociation Framework. . . . .</b>	141
Subrata Datta and Subrata Bose	
<b>Mining Closed Interesting Subspaces to Discover Conducive Living Environment of Migratory Animals . . . . .</b>	153
G.N.V.G. Sirisha and M. Shashi	
<b>Frequent Patterns Mining from Data Cube Using Aggregation and Directed Graph. . . . .</b>	167
Kuldeep Singh, Harish Kumar Shakya and Bhaskar Biswas	
<b>Part V Document Image Analysis</b>	
<b>A Modified Parallel Thinning Method for Handwritten Oriya Character Images . . . . .</b>	181
Soumen Bag and Glory Chawpatnaik	
<b>Offline Signature Verification Using Artificial Neural Network . . . . .</b>	191
Chandra Subhash, Maheshkar Sushila and Srivastava Kislay	
<b>A Simple and Effective Technique for Online Handwritten Bangla Character Recognition . . . . .</b>	201
Shibaprasad Sen, Ram Sarkar and Kaushik Roy	
<b>Visual Analytic-Based Technique for Handwritten Indic Script Identification—A Greedy Heuristic Feature Fusion Framework. . . . .</b>	211
Sk. Md. Obaidullah, Chayan Halder, Nibaran Das and Kaushik Roy	

**Offline Writer Identification from Isolated Characters Using Textural Features** . . . . . 221  
 Chayan Halder, Sk. Md. Obaidullah and Kaushik Roy

**PWDB\_13: A Corpus of Word-Level Printed Document Images from Thirteen Official Indic Scripts** . . . . . 233  
 Sk. Md. Obaidullah, Chayan Halder, Nibaran Das and Kaushik Roy

**Part VI Applications of Metaheuristic Optimization**

**Application of Krill Herd Algorithm for Optimum Design of Load Frequency Controller for Multi-Area Power System Network with Generation Rate Constraint** . . . . . 245  
 Dipayan Guha, Provas Kumar Roy and Subrata Banerjee

**Optimal Allocation of Distributed Generator Using Chemical Reaction Optimization** . . . . . 259  
 Sneha Sultana, Santanu Roy and Provas Kumar Roy

**A Novel Combined Approach of *k*-Means and Genetic Algorithm to Cluster Cultural Goods in Household Budget** . . . . . 273  
 Sara Sadat Babaie, Ebadati E. Omid Mahdi and Tohid Firoozan

**A PSO with Improved Initialization Operator for Solving Multiple Sequence Alignment Problems** . . . . . 285  
 Rohit Kumar Yadav and Haider Banka

**Profit Maximization of TSP with Uncertain Parameters Through a Hybrid Algorithm** . . . . . 295  
 Aditi Khanra, Manas Kumar Maiti and Manoranjan Maiti

**Part VII Wireless Sensor and Ad-hoc Networks**

**Mitigating Packet Dropping Problem and Malicious Node Detection Mechanism in Ad Hoc Wireless Networks** . . . . . 317  
 Shrikant V. Sonekar and Manali M. Kshirsagar

**Service Provisioning Middleware for Wireless Sensor Network** . . . . . 329  
 S. Sasirekha and S. Swamynathan

**A Novel MTC-RB Heuristic for Addressing Target Coverage Problem in Heterogeneous Wireless Sensor Network** . . . . . 345  
 Sonu Choudhary, R.S. Sharma and Sneha Shriya

**Part VIII Quantum Dot Cellular Automata**

**2-Dimensional 2-Dot 1-Electron Quantum Cellular Automata-Based Dynamic Memory Design** . . . . . 357  
 Mili Ghosh, Debarka Mukhopadhyay and Paramartha Dutta

<b>Optimized Approach for Reversible Code Converters Using Quantum Dot Cellular Automata . . . . .</b>	367
Neeraj Kumar Misra, Subodh Wairya and V.K. Singh	
<b>Design of a Logically Reversible Half Adder Using 2D 2-Dot 1-Electron QCA. . . . .</b>	379
Kakali Datta, Debarka Mukhopadhyay and Paramartha Dutta	
 <b>Part IX Fuzzy Sets and Systems</b>	
<b>Intuitionistic Fuzzy Multivalued Dependency and Intuitionistic Fuzzy Fourth Normal Form. . . . .</b>	393
Asma R. Shora, Afshar Alam and Ranjit Biswas	
<b>Parameter Reduction of Intuitionistic Fuzzy Soft Sets and Its Related Algorithms . . . . .</b>	405
Sumonta Ghosh and Sujit Das	
<b>Correlation Measure of Hesitant Fuzzy Linguistic Term Soft Set and Its Application in Decision Making . . . . .</b>	413
Debashish Malakar, Sulekha Gope and Sujit Das	
<b>Constrained Solid Travelling Salesman Problem Solving by Rough GA Under Bi-Fuzzy Coefficients. . . . .</b>	425
Samir Maity, Arindam Roy and Manoranjan Maiti	
 <b>Part X Routing and Traffic Grooming</b>	
<b>A Novel Multi-Criteria Multi-Agent-Based Routing Strategy Based on Tarantula Mating Behavior. . . . .</b>	443
Susmita Bandyopadhyay and Arindam Kumar Chanda	
<b>A Tree Based Multicast Routing Protocol Using Reliable Neighbor Node for Wireless Mobile Ad-Hoc Networks. . . . .</b>	455
Yadav Ajay Kumar and Tripathi Sachin	
<b>Traffic Grooming in Hybrid Optical-WiMAX Mesh Networks. . . . .</b>	467
Deepa Naik, Soumyadeb Maity and Tanmay De	
 <b>Part XI Authentication and Network Security</b>	
<b>Host-Based Intrusion Detection Using Statistical Approaches. . . . .</b>	481
Sunil Kumar Gautam and Hari Om	
<b>Secure Remote Login Scheme with Password and Smart Card Update Facilities. . . . .</b>	495
Rajeev Kumar, Ruhul Amin, Arijit Karati and G.P. Biswas	
<b>Generation and Risk Analysis of Network Attack Graph. . . . .</b>	507
Keshav Prasad, Santosh Kumar, Anuradha Negi and Aniket Mahanti	

<b>Unsupervised Spam Detection in Hyves Using SALSA</b> . . . . .	517
Mohit Agrawal and R. Leela Velusamy	
<b>Cryptanalysis of a Chaotic Map-Based Authentication and Key Agreement Scheme for Telecare Medicine Information Systems</b> . . . . .	527
Sandip Roy and Santanu Chatterjee	
<b>Improving the Accuracy of Intrusion Detection Using GAR-Forest with Feature Selection</b> . . . . .	539
Navaneeth Kumar Kanakarajan and Kandasamy Muniasamy	
<b>Part XII Text Processing</b>	
<b>Sentiment Analysis with Modality Processing</b> . . . . .	551
Surabhi Jain, Louella Mesquita Colaco and Okstynn Rodrigues	
<b>Query-Based Extractive Text Summarization for Sanskrit</b> . . . . .	559
Siddhi Barve, Shaba Desai and Razia Sardinha	
<b>Code Obfuscation by Using Floating Points and Conditional Statements</b> . . . . .	569
Chandan Kumar Behera and D. Lalitha Bhaskari	
<b>Privacy Preserving Spam Email Filtering Based on Somewhat Homomorphic Using Functional Encryption</b> . . . . .	579
Sumit Jaiswal, Subhash Chandra Patel and Ravi Shankar Singh	
<b>Part XIII Image Processing</b>	
<b>Digital Image Watermarking Scheme Based on Visual Cryptography and SVD</b> . . . . .	589
Ajay Kumar Mallick, Priyanka and Sushila Maheshkar	
<b>Compression of Hyper-Spectral Images and Its Performance Evaluation</b> . . . . .	599
K. Subhash Babu, K.K. Thyagarajan and V. Ramachandran	
<b>Hand Gesture Recognition for Sign Language: A Skeleton Approach</b> . . . . .	611
Y.H. Sharath Kumar and V. Vinutha	
<b>Modified Cuckoo Search-Based Image Enhancement</b> . . . . .	625
Lalit Maurya, Prasant Kumar Mahapatra and Garima Saini	
<b>A Novel Iterative Salt-and-Pepper Noise Removal Algorithm</b> . . . . .	635
Amiya Halder, Sayan Halder and Samrat Chakraborty	

## **Part XIV Intelligent System Planning**

<b>Queuing Model for Improving QoS in Cloud Service Discovery . . . . .</b>	<b>647</b>
V. Viji Rajendran and S. Swamynathan	
<b>Adaptive Multilayer Routing for Incremental Design of an SoC. . . . .</b>	<b>657</b>
Debasri Saha	
<b>Analyzing and Modeling Spatial Factors for Pre-decided Route Selection Behavior: A Case Study of Fire Emergency Vehicles of Allahabad City . . . . .</b>	<b>667</b>
Mainak Bandyopadhyay and Varun Singh	
<b>Fault Tolerant Scheduling with Enhanced Performance for Onboard Computers: Evaluation . . . . .</b>	<b>677</b>
Archana Sreekumar and V. Radhamani Pillay	
<b>A Multiagent Planning Algorithm with Joint Actions . . . . .</b>	<b>691</b>
Satyendra Singh Chouhan and Rajdeep Niyogi	
<b>4-Directional Combinatorial Motion Planning Via Labeled Isotonic Array P System . . . . .</b>	<b>701</b>
Williams Sureshkumar and Raghavan Rama	
<b>Intelligent Control of DFIG Using Sensorless Speed Estimation and Lookup Table-Based MPPT Algorithm to Overcome Wind and Grid Disturbances . . . . .</b>	<b>711</b>
D.V.N. Ananth and G.V. Nagesh Kumar	
<b>Erratum to: Query-Based Extractive Text Summarization for Sanskrit. . . . .</b>	<b>E1</b>
Siddhi Barve, Shaba Desai and Razia Sardinha	
<b>Author Index . . . . .</b>	<b>727</b>



<http://www.springer.com/978-81-322-2693-2>

Proceedings of the 4th International Conference on  
Frontiers in Intelligent Computing: Theory and  
Applications (FICTA) 2015

Das, S.; Pal, T.; Kar, S.; Satapathy, S.C.; Mandal, J.K.  
(Eds.)

2016, XX, 729 p. 258 illus., Softcover

ISBN: 978-81-322-2693-2