Advances in Intelligent Systems and Computing

Volume 736

Series editor

Janusz Kacprzyk, Polish Academy of Sciences, Warsaw, Poland
e-mail: kacprzyk@ibspan.waw.pl

The series "Advances in Intelligent Systems and Computing" contains publications on theory, applications, and design methods of Intelligent Systems and Intelligent Computing. Virtually all disciplines such as engineering, natural sciences, computer and information science, ICT, economics, business, e-commerce, environment, healthcare, life science are covered. The list of topics spans all the areas of modern intelligent systems and computing.

The publications within "Advances in Intelligent Systems and Computing" are primarily textbooks and proceedings of important conferences, symposia and congresses. They cover significant recent developments in the field, both of a foundational and applicable character. An important characteristic feature of the series is the short publication time and world-wide distribution. This permits a rapid and broad dissemination of research results.

Ajith Abraham · Pranab Kr. Muhuri
Azah Kamilah Muda · Niketa Gandhi
Editors

Intelligent Systems Design and Applications

17th International Conference on Intelligent Systems Design and Applications (ISDA 2017) Held in Delhi, India, December 14–16, 2017

Springer

Editors
Ajith Abraham
Machine Intelligence Research Labs
Auburn, WA
USA

Pranab Kr. Muhuri
Department of Computer Science
South Asian University
Chanakyapuri, Delhi
India

Azah Kamilah Muda
Faculty of Information and Communication Technology
Universiti Teknikal Malaysia Melaka
Durian Tunggal, Melaka
Malaysia

Niketa Gandhi
Machine Intelligence Research Labs
Auburn, WA
USA

ISSN 2194-5357 ISSN 2194-5365 (electronic)
Advances in Intelligent Systems and Computing
ISBN 978-3-319-76347-7 ISBN 978-3-319-76348-4 (eBook)
https://doi.org/10.1007/978-3-319-76348-4

Library of Congress Control Number: 2018935895

Printed on acid-free paper

This Springer imprint is published by the registered company Springer International Publishing AG part of Springer Nature
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Preface

Welcome to the Proceedings of the 17th International Conference on Intelligent Systems Design and Applications (ISDA17), which was held in South Asian University, Delhi, India, during December 14–16, 2017. ISDA 2017 is jointly organized by the Machine Intelligence Research Labs (MIR Labs), USA, and South Asian University, Delhi, India.

ISDA 2017 brings together researchers, engineers, developers, and practitioners from academia and industry working in all interdisciplinary areas of intelligent systems and system engineering to share their experiences, and to exchange and cross-fertilize their ideas. The aim of ISDA 2017 is to serve as a forum for the dissemination of state-of-the-art research and development of intelligent systems, intelligent technologies, and applications. ISDA 2017 was organized in conjunction with the 7th World Congress on Information and Communication Technologies (WICT 2017).

The themes of the contributions and scientific sessions range from theories to applications, reflecting a wide spectrum of the coverage of intelligent systems and computational intelligence areas. ISDA 2017 received submissions from over 30 countries, and each paper was reviewed by at least 5 reviewers in a standard peer-review process. Based on the recommendation by 5 independent referees, finally about 100 papers were accepted for publication in the proceedings published by Springer, Verlag.

Many people have collaborated and worked hard to produce the successful ISDA 2017 conference. First, we would like to thank all the authors for submitting their papers to the conference, for their presentations and discussions during the conference. Our thanks go to Program Committee members and reviewers, who carried out the most difficult work by carefully evaluating the submitted papers. Our special thanks to Patricia Melin, Tijuana Institute of Technology, Tijuana, Mexico, and Alexander Gelbukh, Instituto Politécnico Nacional, Mexico City, Mexico, for the exciting plenary talks.

We express our sincere thanks to special session chairs and organizing committee chairs for helping us to formulate a rich technical program.

Ajith Abraham
Pranab Kr. Muhuri
ISDA 2017 - General Chairs

ISDA 2017 Organization

General Chairs

Ajith Abraham	Machine Intelligence Research Labs, USA
Pranab Kr. Muhuri	South Asian University, Delhi, India

Program Committee Co-chairs

Simone Ludwig	North Dakota State University, USA
Aswani Kumar	VIT University, Vellore, India
Punam Bedi	University of Delhi, India
Millie Pant	Indian Institute of Technology Roorkee, India
Antonio J. Tallón-Ballesteros	University of Seville, Spain

Advisory Board

Albert Zomaya	The University of Sydney, Australia
Andre Ponce de Leon F. de Carvalho	University of Sao Paulo at Sao Carlos, Brazil
Bruno Apolloni	University of Milano, Italy
Hideyuki Takagi	Kyushu University, Japan
Imre J. Rudas	Óbuda University, Hungary
Janusz Kacprzyk	Polish Academy of Sciences, Poland
Javier Montero	Complutense University of Madrid, Spain
Krzysztof Cios	Virginia Commonwealth University, USA
Marina Gavrilova	University of Calgary, Canada
Mario Koeppen	Kyushu Institute of Technology, Japan
Mohammad Ishak Desa	Universiti Teknikal Malaysia Melaka, Malaysia
Patrick Siarry	Université Paris-Est Créteil, France
Ronald Yager	Iona College, USA

Salah Al-Sharhan	Gulf University of Science and Technology, Kuwait
Sebastian Ventura	University of Cordoba, Spain
Vincenzo Piuri	Università degli Studi di Milano, Italy

Publication Chairs

Azah Kamilah Muda	UTeM, Malaysia
Niketa Gandhi	Machine Intelligence Research Labs, USA

Local Organizing Committee

Q. M. Danish Lohani	South Asian University, India danishlohani@cs.sau.ac.in

Local Organizing Committee Members

Amit K. Shukla	South Asian University, Delhi, India
Ashraf Zubair	South Asian University, Delhi, India
Manvendra Janmaijaya	South Asian University, Delhi, India
Amit Rauniyar	South Asian University, Delhi, India
Rahul Nath	South Asian University, Delhi, India
Sandeep Kumar	South Asian University, Delhi, India
Taniya Seth	South Asian University, Delhi, India
Deepika Malhotra	South Asian University, Delhi, India

Web Service

Kun Ma	University of Jinan, China

International Program Committee

Ajith Abraham	Machine Intelligence Research Labs, USA
Akila Muthuramalingam	KPR Institute of Engineering and Technology, India
Alberto Cano	University of Córdoba, Spain
Amiya Tripathy	Don Bosco Institute of Technology, Mumbai, India
Andrzej Skowron	Warsaw University of Technology, Poland
Anna Jordanous	University of Kent, UK
Antonio J. Tallón Ballesteros	Universidad de Sevilla, Spain

Aswani Cherukuri	Vellore Institute of Technology, India
Bharanidharan Shanmugam	Universiti Teknologi Malaysia, Malaysia
Bin Li	University of Science and Technology of China, China
Carlos Pereira	Instituto Superior de Engenharia de Coimbra, Portugal
Cerasela Crisan	"Vasile Alecsandri" University of Bacau, Romania
César Hervás Martínez	University of Córdoba, Spain
Chao Chun Chen	Southern Taiwan University of Science and Technology, Taiwan
Chin-Shiuh Shieh	National Kaohsiung University of Applied Sciences, Taiwan
Daniela Zaharie	West University of Timisoara, Romania
Diaf Moussa	Université Mouloud Mammeri, Algeria
Dilip Pratihar	Indian Institute of Technology Roorkee, India
Eduardo Solteiro Pires	University of Trás-os-Montes and Alto Douro, Portugal
Efrén Mezura Montes	Universidad Veracruzana, Mexico
Eiji Uchino	Yamaguchi University, Japan
Elizabeth Goldbarg	Universidade Federal do Rio Grande do Norte, Brazil
Enrique Dominguez	Universidad de Málaga, Spain
Fabrício Olivetti de França	Universidade Federal do ABC, Brazil
Fedja Netjasov	University of Belgrade, Serbia
José Francisco Martínez Trinidad	National Institute of Astrophysics, Optics and Electronics, Puebla, Mexico
Gagandeep Kaur	JIIT, Noida, India
Georg Peters	Munich University of Applied Sciences, Germany
Hector Benitez-Perez	Universidad Nacional Autónoma de México, Mexico
Heder Bernardino	Universidade Federal de Juiz de For a, Brazil
Hema Banati	University of Delhi, India
Hiroshi Dozono	Saga University, Japan
Ilhem Kallel	École Nationale d'Ingénieurs de Sfax, Tunisia
Isabel Barbancho	Universidad de Málaga, Spain
Isabel S. Jesus	Instituto Superior de Engenharia do Porto, Portugal
Janos Botzheim	Tokyo Metropolitan University, Japan
Jerzy Grzymala Busse	University of Kansas, USA
Jolanta Mizera-Pietraszko	Opole University, Poland
Kelemen Arpad	University of Maryland, USA
Keun Ho Ryu	Chungbuk National University, South Korea
Konstantinos Parsopoulos	University of Ioannina, Greece

Korhan Karabulut	Yaşar Üniversitesi, Turkey
Kyriakos Kritikos	Foundation for Research and Technology (FORTH) Hellas, Greece
Laurence Amaral	Universidade Federal de Uberlândia, Brazil
Lee Chang Yong	Kongju National University, South Korea
Leocadio G. Casado	University of Almería, Spain
Leticia Hernando	The University of the Basque Country, Spain
Lin Wang	Jinan University, China
Lubna Gabralla	Sudan University of Science and Technology, Sudan
Ludwig Simone	North Dakota State University, USA
Luigi Troiano	University of Sannio, Italy
Matthias Becker	Leibniz Universität Hannover, Germany
Mauricio Ayala Rincon	Universidade de Brasilia, Brazil
Mdrafiul Hassan	King Fahd University of Petroleum & Minerals, Dhahran, KSA
Millie Pant	Indian Institute of Technology Roorkee, India
Mohammad Shojafar	Sapienza University of Rome, Italy
Mrutyunjaya Panda	Gandhi Institute for Technological Advancement, India
Nebojsa Bacanin	Megatrend Univerzitet, Serbia
Neetu Sardana	JIIT, Noida, India
Niketa Gandhi	Machine Intelligence Research Labs, USA
Olfa Jemai	Université de Sfax, Tunisia
Oscar Castillo	Tijuana Institute of Technology, Tijuana
Oscar Gabriel Reyes Pupo	The University of Central Oklahoma, USA
Patrick Siarry	Université de Paris, France
Paulo Carrasco	Universidade do Algarve, Portugal
Paulo Moura Oliveira	University of Trás-os-Montes and Alto Douro, Portugal
Pranab Muhuri	South Asian University, Delhi, India
Ramzan Muhammad	Maulana Mukhtar Ahmad Nadvi Technical Campus, India
Shikha Mehta	JIIT, Noida, India
Shing Chiang Tan	Multimedia University, Malaysia
Shu Fen Tu	Chinese Culture University, China
Siddhivinayak Kulkarni	University of Ballarat, Australia
Tarun Sharma	Amity University, Rajasthan
Terry Gafron	Bio Inspired Technologies, USA
Thomas Hanne	University of Applied Sciences Northwestern Switzerland, Switzerland
Usue Mori	University of the Basque Country, Spain
Varun Kumar Ojha	Swiss Federal Institute of Technology, Switzerland

Additional Reviewers

Kaushik Das Sharma	University of Calcutta, India
Safia Djemame	Ferhat Abbas University, Algeria
Yi-Fei Pu	Sichuan University, China
Md Sarwar Haque	King Fahd University of Petroleum & Minerals Dammam, Saudi Arabia
Denis Felipe	Federal University of Rio Grande do Norte, Brazil
Sílvia M. D. M. Maia	Federal University of Rio Grande do Norte, Brazil
Lucas Daniel M. S. Pinheiro	Universidade Federal do Rio Grande do Norte, Brazil
Hector-Gabriel Acosta-Mesa	Universidad Veracruzana, Mexico
Edgar-Alfredo Portilla-Flores	Instituto Politécnico Nacional, Mexico
Md Sarwar Haque	King Fahd University of Petroleum & Minerals, Saudi Arabia
Adelaide Cerveira	INESC TEC and UTAD, Portugal
Joslaine Cristina Jeske de Freitas	Universidade Federal de Goiás, Brazil
Eliana Pantaleão	Universidade Federal de Uberlândia, Brasil
Ariane Alves Almeida	University of Brasília, Brazil
Lucas Angelo Silveira	University of Brasília, Brazil
Daniele Nantes-Sobrinho	University of Brasília, Brazil
Daniel Saad Nogueira Nunes	University of Brasília, Brazil
Sumit Kumar Banshal	South Asian University, Delhi, India
Rajesh Piryani	South Asian University, Delhi, India
Sandeep Kumar	South Asian University, Delhi, India
Amit Kumar Shukla	South Asian University, Delhi, India
Thatiana C. N. Souza	Federal University Rural Semi-Arid, Brazil
Shadrack Maina Mambo	Kenyatta University, Nairobi, Kenya
Nawel Drira	Ecole Nationale d'Electronique et des Télécommunications de Sfax, Tunisia
Esteban José Palomo	University of Malaga, Spain

Contents

Enhancing Job Opportunities in Rural India Through Constrained Cognitive Learning Process: Reforming Basic Education 1
Shivangi Nigam, Abhishek Bajpai, and Bineet Gupta

UML2ADA for Early Verification of Concurrency Inside the UML2.0 Atomic Components 10
Taoufik Sakka Rouis, Mohamed Tahar Bhiri, Mourad Kmimech, and Layth Sliman

A New Approach for the Diagnosis of Parkinson's Disease Using a Similarity Feature Extractor 21
João W. M. de Souza, Jefferson S. Almeida, and Pedro Pedrosa Rebouças Filho

A Novel Restart Strategy for Solving Complex Multi-modal Optimization Problems Using Real-Coded Genetic Algorithm 32
Amit Kumar Das and Dilip Kumar Pratihar

Evaluating SPL Quality with Metrics 42
Jihen Maazoun, Nadia Bouassida, and Hanêne Ben-Abdallah

Using Sentence Similarity Measure for Plagiarism Detection of Arabic Documents 52
Wafa Wali, Bilel Gargouri, and Abdelmajid Ben Hamadou

Computer Aided Recognition and Classification of Coats of Arms 63
Frantisek Videnský and Frantisek Zboril Jr.

Mining Gene Expression Data: Patterns Extraction for Gene Regulatory Networks 74
Manel Gouider, Ines Hamdi, and Henda Ben Ghezala

Exploring Location and Ranking for Academic Venue Recommendation 83
Nour Mhirsi and Imen Boukhris

Designing Compound MAPE Patterns for Self-adaptive Systems 92
Marwa Hachicha, Riadh Ben Halima, and Ahmed Hadj Kacem

CRF+LG: A Hybrid Approach for the Portuguese Named Entity Recognition 102
Juliana P. C. Pirovani and Elias de Oliveira

A Secure and Efficient Temporal Features Based Framework for Cloud Using MapReduce 114
P. Srinivasa Rao and P. E. S. N. Krishna Prasad

A Comparison of Machine Learning Methods to Identify Broken Bar Failures in Induction Motors Using Statistical Moments 124
Navar de Medeiros Mendonça e Nascimento,
Cláudio Marques de Sá Medeiros, and Pedro Pedrosa Rebouças Filho

Canonical Correlation-Based Feature Fusion Approach for Scene Classification 134
J. Arunnehru, A. Yashwanth, and Shaik Shammer

A Mixed-Integer Linear Programming Model and a Simulated Annealing Algorithm for the Long-Term Preventive Maintenance Scheduling Problem 144
Roberto D. Aquino, Jonatas B. C. Chagas, and Marcone J. F. Souza

Interval Valued Feature Selection for Classification of Logo Images . . . 154
D. S. Guru and N. Vinay Kumar

An Hierarchical Framework for Classroom Events Classification 166
D. S. Guru, N. Vinay Kumar, K. N. Mahalakshmi Gupta, S. D. Nandini,
H. N. Rajini, and G. Namratha Urs

Hand Gesture Recognition System Based on Local Binary Pattern Approach for Mobile Devices 180
Houssem Lahiani, Monji Kherallah, and Mahmoud Neji

An Efficient Real-Time Approach for Detection of Parkinson's Disease 191
Joyjit Chatterjee, Ayush Saxena, Garima Vyas, and Anu Mehra

Dual Image Encryption Technique: Using Logistic Map and Noise 201
Muskaan Kalra, Hemant Kumar Dua, and Reena Singh

A Memetic Algorithm for the Network Construction Problem with Due Dates 209
Jonatas B. C. Chagas, André G. Santos, and Marcone J. F. Souza

Incremental Real Time Support Vector Machines 221
Fahmi Ben Rejab and Kaouther Nouira

Content-Based Classification Approach for Video-Spam Identification 231
Palak Agarwal, Mahak Sharma, and Gagandeep Kaur

Kinematic Analysis and Simulation of a 6 DOF Robot in a Web-Based Platform Using CAD File Import 243
Ujjal Dey and Kumar Cheruvu Siva

Large Scale Deep Network Architecture of CNN for Unconstraint Visual Activity Analytics 251
Naresh Kumar

An Automated Support Tool to Compute State Redundancy Semantic Metric 262
Dalila Amara, Ezzeddine Fatnassi, and Latifa Rabai

Computing Theory Prime Implicates in Modal Logic 273
Manoj K. Raut, Tushar V. Kokane, and Rishabh Agarwal

Fault Tolerance in Real-Time Systems: A Review 283
Egemen Ertugrul and Ozgur Koray Sahingoz

Gauss-Newton Representation Based Algorithm for Magnetic Resonance Brain Image Classification 294
Lingraj Dora, Sanjay Agrawal, and Rutuparna Panda

Evaluating Different Similarity Measures for Automatic Biomedical Text Summarization 305
Mozhgan Nasr Azadani and Nasser Ghadiri

Fingerprint Image Enhancement Using Steerable Filter in Wavelet Domain 315
K. S. Jeyalakshmi and T. Kathirvalavakumar

Privacy Preserving Hu's Moments in Encrypted Domain 326
G. Preethi and Aswani Kumar Cherukuri

Ensemble of Feature Selection Methods for Text Classification: An Analytical Study 337
D. S. Guru, Mahamad Suhil, S. K. Pavithra, and G. R. Priya

Correlation Scaled Principal Component Regression 350
Krishna Kumar Singh, Amit Patel, and Chiranjeevi Sadu

Automated Detection of Diabetic Retinopathy Using Weighted Support Vector Machines 357
Soumyadeep Bhattacharjee and Avik Banerjee

Predictive Analysis of Alertness Related Features for Driver Drowsiness Detection 368
Sachin Kumar, Anushtha Kalia, and Arjun Sharma

Association Rules Transformation for Knowledge Integration and Warehousing 378
Rim Ayadi, Yasser Hachaichi, and Jamel Feki

Abnormal High-Level Event Recognition in Parking lot 389
Najla Bouarada Ghrab, Rania Rebai Boukhriss, Emna Fendri, and Mohamed Hammami

Optimum Feature Selection Using Firefly Algorithm for Keystroke Dynamics 399
Akila Muthuramalingam, Jenifa Gnanamanickam, and Ramzan Muhammad

Multi-UAV Path Planning with Multi Colony Ant Optimization 407
Ugur Cekmez, Mustafa Ozsiginan, and Ozgur Koray Sahingoz

An Efficient Method for Detecting Fraudulent Transactions Using Classification Algorithms on an Anonymized Credit Card Data Set 418
Sylvester Manlangit, Sami Azam, Bharanidharan Shanmugam, Krishnan Kannoorpatti, Mirjam Jonkman, and Arasu Balasubramaniam

A Deep Convolution Neural Network Based Model for Enhancing Text Video Frames for Detection 430
C. Sunil, H. K. Chethan, K. S. Raghunandan, and G. Hemantha Kumar

A Novel Approach for Steganography App in Android OS 442
Kushal Gurung, Sami Azam, Bharanidharan Shanmugam, Krishnan Kannoorpatti, Mirjam Jonkman, and Arasu Balasubramaniam

Exploring Human Movement Behaviour Based on Mobility Association Rule Mining of Trajectory Traces 451
Shreya Ghosh and Soumya K. Ghosh

Image Sentiment Analysis Using Convolutional Neural Network 464
Akshi Kumar and Arunima Jaiswal

Cluster Based Approaches for Keyframe Selection in Natural Flower Videos 474
D. S. Guru, V. K. Jyothi, and Y. H. Sharath Kumar

From Crisp to Soft Possibilistic and Rough Meta-clustering of Retail Datasets 485
Asma Ammar and Zied Elouedi

Improved Symbol Segmentation for TELUGU Optical Character Recognition 496
Sukumar Burra, Amit Patel, Chakravarthy Bhagvati, and Atul Negi

Semantic Attribute Classification Related to Gait 508
Imen Chtourou, Emna Fendri, and Mohamed Hammami

Classification of Dengue Gene Expression Using Entropy-Based Feature Selection and Pruning on Neural Network 519
Pandiselvam Pandiyarajan and Kathirvalavakumar Thangairulappan

Hardware Trojan: Malware Detection Using Reverse Engineering and SVM 530
Girishma Jain, Sandeep Raghuwanshi, and Gagan Vishwakarma

Obtaining Word Embedding from Existing Classification Model 540
Martin Sustek and Frantisek V. Zboril

A Robust Static Sign Language Recognition System Based on Hand Key Points Estimation 548
Pengfei Sun, Feng Chen, Guijin Wang, Jinsheng Ren, and Jianwu Dong

Multiobjective Genetic Algorithm for Minimum Weight Minimum Connected Dominating Set 558
Dinesh Rengaswamy, Subham Datta, and Subramanian Ramalingam

Modeling of a System for fECG Extraction from abdECG 568
Rolant Gini John, Ponmozhy Deepan Chakravarthy, K. I. Ramachandran, and Pooja Anand

Supervised Learning Model for Combating Cyberbullying: Indonesian Capital City 2017 Governor Election Case 580
Putri Sanggabuana Setiawan, Muhammad Ikhwan Jambak, and Muhammad Ihsan Jambak

Improving upon Package and Food Delivery by Semi-autonomous Tag-along Vehicles 589
Vaclav Uhlir, Frantisek Zboril, and Jaroslav Rozman

A Novel Multi-party Key Exchange Protocol 597
Swapnil Paliwal and Ch. Aswani Kumar

NLP Based Phishing Attack Detection from URLs 608
Ebubekir Buber, Banu Diri, and Ozgur Koray Sahingoz

Hand Pose Estimation System Based on a Cascade Approach for Mobile Devices 619
Houssem Lahiani, Monji Kherallah, and Mahmoud Neji

HMI Fuzzy Assessment of Complex Systems Usability 630
Ilhem Kallel, Mohamed Jouili, and Houcine Ezzedine

A Novel Hybrid GA for the Assignment of Jobs to Machines in a Complex Hybrid Flow Shop Problem 640
Houda Harbaoui, Soulef Khalfallah, and Odile Bellenguez-Morineau

Selecting Relevant Educational Attributes for Predicting Students' Academic Performance 650
Abir Abid, Ilhem Kallel, Ignacio J. Blanco, and Mounir Benayed

Detection and Localization of Duplicated Frames in Doctored Video . . . 661
Vivek Kumar Singh, Pavan Chakraborty, and Ramesh Chandra Tripathi

A Novel Approach for Approximate Spatio-Textual Skyline Queries . . . 670
Seyyed Hamid Aboutorabi, Nasser Ghadiri, and Mohammad Khodizadeh Nahari

SMI-Based Opinion Analysis of Cloud Services from Online Reviews . . . 683
Emna Ben-Abdallah, Khouloud Boukadi, and Mohamed Hammami

Heuristics for the Hybrid Flow Shop Scheduling Problem with Parallel Machines at the First Stage and Two Dedicated Machines at the Second Stage 693
Zouhour Nabli, Soulef Khalfallah, and Ouajdi Korbaa

Breast Density Classification for Cancer Detection Using DCT-PCA Feature Extraction and Classifier Ensemble 702
Md Sarwar Morshedul Haque, Md Rafiul Hassan, G. M. BinMakhashen, A. H. Owaidh, and Joarder Kamruzzaman

Scheduling Analysis and Correction of Periodic Real Time Systems with Tasks Migration 712
Faten Mrabet, Walid Karamti, and Adel Mahfoudhi

Generating Semantic and Logic Meaning Representations When Analyzing the Arabic Natural Questions 724
Wided Bakari, Patrice Bellot, and Mahmoud Neji

An Arabic Question-Answering System Combining a Semantic and Logical Representation of Texts 735
Mabrouka Ben-Sghaier, Wided Bakari, and Mahmoud Neji

Algorithms for Finding Maximal and Maximum Cliques: A Survey . . . 745
Faten Fakhfakh, Mohamed Tounsi, Mohamed Mosbah, and Ahmed Hadj Kacem

K4BPMN Modeler: An Extension of BPMN2 Modeler with the Knowledge Dimension Based on Core Ontologies 755
Molka Keskes, Mariam Ben Hassen, and Mohamed Turki

Exploring the Integration of Business Process with Nosql Databases in the Context of BPM 771
Asma Hassani and Sonia Ayachi Ghannouchi

An Effective Heuristic Algorithm for the Double Vehicle Routing Problem with Multiple Stack and Heterogeneous Demand 785
Jonatas B. C. Chagas and André G. Santos

Named Entity Recognition from Gujarati Text Using Rule-Based Approach 797
Dikshan N. Shah and Harshad B. Bhadka

A Meta-modeling Approach to Create a Multidimensional Business Knowledge Model Based on BPMN 806
Sonya Ouali, Mohamed Mhiri, and Faiez Gargouri

Toward a MapReduce-Based K-Means Method for Multi-dimensional Time Serial Data Clustering 816
Yongzheng Lin, Kun Ma, Runyuan Sun, and Ajith Abraham

Mining Communities in Directed Networks: A Game Theoretic Approach 826
Annapurna Jonnalagadda and Lakshmanan Kuppusamy

A Support Vector Machine Based Approach to Real Time Fault Signal Classification for High Speed BLDC Motor 836
Tribeni Prasad Banerjee and Ajith Abraham

Automatic Identification of Malaria Using Image Processing and Artificial Neural Network 846
Mahendra Kanojia, Niketa Gandhi, Leisa J. Armstrong, and Pranali Pednekar

Comparative Analysis of Adaptive Filters for Predicting Wind-Power Generation (SLMS, NLMS, SGDLMS, WLMS, RLMS) . . . 858
Ashima Arora and Rajesh Wadhvani

Blind Write Protocol 868
Khairul Anshar, Nanna Suryana, and Noraswaliza Binti Abdullah

Ontology Visualization: An Overview 880
Nassira Achich, Bassem Bouaziz, Alsayed Algergawy, and Faiez Gargouri

Towards a Contextual and Semantic Information Retrieval System Based on Non-negative Matrix Factorization Technique 892
Nesrine Ksentini, Mohamed Tmar, and Faïez Gargouri

Design and Simulation of Multi-band M-shaped Vivaldi Antenna 903
Jalal J. Hamad Ameen

Performance Evaluation of Openflow SDN Controllers 913
Sangeeta Mittal

Monitoring Chili Crop and Gray Mould Disease Analysis Through Wireless Sensor Network 924
Sana Shaikh, Amiya Kumar Tripathy, Gurleen Gill, Anjali Gupta, and Riya Hegde

Intelligent AgriTrade to Abet Indian Farming 932
Kalpita Wagaskar, Nilakshi Joshi, Amiya Kumar Tripathy, Gauri Datar, Suraj Singhvi, and Rohan Paul

Evaluating the Efficiency of Higher Secondary Education State Boards in India: A DEA-ANN Approach 942
Natthan Singh and Millie Pant

Design of Millimeter-Wave Microstrip Antenna Array for 5G Communications – A Comparative Study 952
Saswati Ghosh and Debarati Sen

Simulation Design of Aircraft CFD Based on High Performance Parallel Computation 961
Yinfen Xie

Determining the Optimum Release Policy Through Differential Evolution: A Case Study of Mula Irrigation Project 969
Bilal, Millie Pant, and Deepti Rani

Characterising the Impact of Drought on Jowar (Sorghum spp) Crop Yield Using Bayesian Networks 979
Shubhangi S. Wankhede and Leisa J. Armstrong

Linear Programming Based Optimum Crop Mix for Crop Cultivation in Assam State of India 988
Rajni Jain, Kingsly Immaneulraj, Lungkudailiu Malangmeih, Nivedita Deka, S. S. Raju, S. K. Srivastava, J. P. Hazarika, Amrit Pal Kaur, and Jaspal Singh

eDWaaS: A Scalable Educational Data Warehouse as a Service 998
Anupam Khan, Sourav Ghosh, and Soumya K. Ghosh

Online Academic Social Networking Sites (ASNSs) Selection Through AHP for Placement of Advertisement of E-Learning Website 1008
Meenu Singh, Millie Pant, Arshia Kaul, and P. C. Jha

Fingerprint Based Gender Identification Using Digital Image Processing and Artificial Neural Network 1018
Mahendra Kanojia, Niketa Gandhi, Leisa J. Armstrong, and Chetna Suthar

Indian Mobile Agricultural Services Using Big Data and Internet of Things (IoT) 1028
Pallavi Chatuphale and Leisa Armstrong

A Study of the Privacy Attitudes of the Users of the Social Network(ing) Sites and Their Expectations from the Law in India 1038
Sandeep Mittal and Priyanka Sharma

Author Index 1053