

Advances in Intelligent Systems and Computing

Volume 845

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 such as: computational intelligence, soft computing including neural networks, fuzzy systems, evolutionary computing and the fusion of these paradigms, social intelligence, ambient intelligence, computational neuroscience, artificial life, virtual worlds and society, cognitive science and systems, Perception and Vision, DNA and immune based systems, self-organizing and adaptive systems, e-Learning and teaching, human-centered and human-centric computing, recommender systems, intelligent control, robotics and mechatronics including human-machine teaming, knowledge-based paradigms, learning paradigms, machine ethics, intelligent data analysis, knowledge management, intelligent agents, intelligent decision making and support, intelligent network security, trust management, interactive entertainment, Web intelligence and multimedia.

The publications within “Advances in Intelligent Systems and Computing” are primarily 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.

Advisory Board

Chairman

Nikhil R. Pal, Indian Statistical Institute, Kolkata, India

e-mail: nikhil@isical.ac.in

Members

Rafael Bello Perez, Universidad Central “Marta Abreu” de Las Villas, Santa Clara, Cuba

e-mail: rbellop@uclv.edu.cu

Emilio S. Corchado, University of Salamanca, Salamanca, Spain

e-mail: escorchado@usal.es

Hani Hagras, University of Essex, Colchester, UK

e-mail: hani@essex.ac.uk

László T. Kóczy, Széchenyi István University, Győr, Hungary

e-mail: koczy@sze.hu

Vladik Kreinovich, University of Texas at El Paso, El Paso, USA

e-mail: vladik@utep.edu

Chin-Teng Lin, National Chiao Tung University, Hsinchu, Taiwan

e-mail: ctlin@mail.nctu.edu.tw

Jie Lu, University of Technology, Sydney, Australia

e-mail: Jie.Lu@uts.edu.au

Patricia Melin, Tijuana Institute of Technology, Tijuana, Mexico

e-mail: epmelin@hafsamx.org

Nadia Nedjah, State University of Rio de Janeiro, Rio de Janeiro, Brazil

e-mail: nadia@eng.uerj.br

Ngoc Thanh Nguyen, Wroclaw University of Technology, Wroclaw, Poland

e-mail: Ngoc-Thanh.Nguyen@pwr.edu.pl

Jun Wang, The Chinese University of Hong Kong, Shatin, Hong Kong

e-mail: jwang@mae.cuhk.edu.hk

More information about this series at <http://www.springer.com/series/11156>

About Ella Hassanien · Mohamed F. Tolba
Khaled Shaalan · Ahmad Taher Azar
Editors

Proceedings of the International Conference on Advanced Intelligent Systems and Informatics 2018

Editors

Aboul Ella Hassanien
Information Technology Department,
Faculty of Computers and Information
Cairo University
Giza, Egypt

Mohamed F. Tolba
Ain Shams University
Cairo, Egypt

Khaled Shaalan
Dubai International Academic City
The British University in Dubai
Dubai, United Arab Emirates

Ahmad Taher Azar
Faculty of Computers and Information
Benha University
Benha, Egypt

ISSN 2194-5357

ISSN 2194-5365 (electronic)

Advances in Intelligent Systems and Computing

ISBN 978-3-319-99009-5

ISBN 978-3-319-99010-1 (eBook)

<https://doi.org/10.1007/978-3-319-99010-1>

Library of Congress Control Number: 2018951098

© Springer Nature Switzerland AG 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, express 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 Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Preface

This volume constitutes the refereed proceedings of the 4th International Conference on Advanced Intelligent Systems and Informatics (AISI 2018), which took place in Cairo, Egypt, during September 3–5, 2018, and is an international interdisciplinary conference covering research and development in the field of informatics and intelligent systems.

In response to the call for papers for AISI2018, 142 papers were submitted for presentation and inclusion in the proceedings of the conference. After a careful blind refereeing process, 61 papers were selected for inclusion in the conference proceedings. The papers were evaluated and ranked on the basis of their significance, novelty, and technical quality by at least two reviewers per paper. After a careful blind refereeing process, 61 papers were selected for inclusion in the conference proceedings. The papers cover current research in machine learning, robot modeling and control systems, sentiment analysis and Arabic text mining, Part (V) deep learning and cloud computing, Part (VII) data mining, visualization and E-learning, and intelligence swarms and optimization. In addition to these papers, the program included one keynote talk by Professor Zbigniew Suraj, University of Rzeszów, Poland, on linking fuzzy Petri nets with interval analysis.

We express our sincere thanks to the plenary speakers, workshop chairs, and international program committee members for helping us to formulate a rich technical program. We would like to extend our sincere appreciation for the outstanding work contributed over many months by the organizing committee: Local Organization Chair and Publicity Chair. We also wish to express our appreciation to the SRGE members for their assistance. We would like to emphasize that the success of AISI2018 would not have been possible without the support of many committed volunteers who generously contributed their time, expertise, and resources toward making the conference an unqualified success. Finally, thanks to

Springer team for their supporting in all stages of the production of the proceedings.
We hope that you will enjoy the conference program.

About Ella Hassanien
Mohamed F. Tolba
Ahmad Taher Azar
Khaled Shaalan

Organization

Honorary Chair

Fahmy Tolba, Egypt

General Chairs

About Ella Hassanien
Khaled Shaalan

Egypt
British University in Dubai

Program Chairs

Siddhartha Bhattacharyya, India
Mohamed Elhoseny, Egypt
Ashraf Darwish, Egypt

International Advisory Board

Neetu Agarwal, India
Swagatam Das, India
Xiao-Zhi Gao, Finland
Hesham Hefny, Egypt
Fahmy Tolba, Egypt
Fatos Xhafa, Spain

Vaclav Snasel, Czech Republic
Janusz Kacprzyk, Poland
Tai-hoon Kim, Korea
Qing Tan, Canada
Hiroshi Sakai, Japan
Khaled Shaalan, Egypt

Publicity Chairs

Saurav Karmakar, India
 Deepak Gupta, India
 Abdelhameed Ibrahim, Egypt
 Mohamed Abd Elfattah, Egypt

Technical Program Committee

| | |
|-----------------------|----------------------------------|
| Said Broumi | Morocco |
| Nahla Zaaboub Haddar | University of Sfax, Tunisia |
| Maytham Alabbas | UK |
| Essam Hamed | Egypt |
| Sherif Abuelenin | Egypt |
| Ashraf AbdelRaouf | Egypt |
| Aarti Singh | India |
| Tahani Alsubait | UK |
| Evgenia Theodotou | Greece |
| Pavel Kromer | Czech Republic |
| Irma Aslanishvili | Czech Republic |
| Jan Platos | Czech Republic |
| Ivan Zelinka | Czech Republic |
| Sebastian Tiscordio | Czech Republic |
| Natalia Spyropoulou | Hellenic Open University, Greece |
| Dimitris Sedaris | Hellenic Open University, Greece |
| Vassiliki Pligou | Metropolitan College, Greece |
| Pilios Stavrou | Metropolitan College, Greece |
| Eleni Seralidou | University of Piraeus, Greece |
| Stelios Kavalaris | Metropolitan College, Greece |
| Litsa Charitaki | University of Athens, Greece |
| Elena Amarica | University of Timisoara, Greece |
| Qing Tan | Athabasca University, Greece |
| Pascal Roubides | Broward College, Greece |
| Manal Abdullah | King Abdulaziz University, KSA |
| Mandia Athanasopoulou | Metropolitan College, Greece |
| Vicky Goltsi | Metropolitan College, Greece |
| Mohammad Reza Noruzi | Tarbiat Modares University, Iran |
| Abdelhameed Ibrahim | Egypt |
| Ahmad Taher Azar | Egypt |
| Ahmed Elhayek | Germany |
| Alaa Tharwat | Belgium |
| Amira S. Ashour | KSA |
| Boyang Albert Li | . |

| | |
|-----------------------|---------|
| Edgard Marx | Germany |
| Fatma Helmy | Egypt |
| Hany Alnashar | Egypt |
| Islam Amin | Egypt |
| Ivan Ermilov | Germany |
| Mahmoud Awadallah | USA |
| Maryam Hazman | Egypt |
| Minu Kesheri | India |
| Mohamed Hamed | Germany |
| Mohamed Shrif | Germany |
| Mohamed Abdelfatah | Egypt |
| Mohammed Abdel-Megeed | Egypt |
| Mona Solyman | Egypt |
| Muhammad Saleem | Germany |
| Nabiha Azizi | Algeria |
| Namshik Han | UK |
| Noreen Kausar | KSA |
| Rania Hodhod | Georgia |
| Reham Ahmed | Egypt |
| Sara Abdelkader | Canada |
| Sayan Chakraborty | India |
| Shoji Tominaga | Japan |
| Siva Ganesh Malla | India |
| Soumya Banerjee | India |
| Sourav Samanta | India |
| Suvojit Acharjee | India |
| Swarna Kanchan | India |
| Takahiko Horiuchi | Japan |
| Tommaso Soru | Germany |
| Wahiba Ben Abdessalem | KSA |
| Zeineb Chelly | Tunis |

Local Arrangement Chairs

Mohamed Abd Elfattah (Chair), Egypt
 Hassan Aboul Ella Hassanien
 Heba Aboul Ella Hassanien
 Taha Aboul Ella Hassanien

Linking Fuzzy Petri Nets with Interval Analysis (Invited Speaker)

Zbigniew Suraj

University of Rzeszów in Poland

Abstract. Fuzzy Petri nets (FPNs) are a modification of the classic Petri nets that enable modeling of knowledge-based systems (KBSs) with uncertain information. FPNs have been widely used in knowledge representation and approximate reasoning in KBSs. Previous FPN models, as indicated in the literature on this subject, are plagued by a number of shortcomings and are not suitable for increasingly complex KBSs. Therefore, many alternative models have been proposed in the literature to increase the power of FPN knowledge representation and to apply rule-based reasoning more intelligently and more efficiently. It is almost universally known that interval analysis has been developed to make it easier to deal with the processing of uncertain information. In this lecture, we present an approach based on the use of positive aspects of interval analysis to strengthen the FPN into a more realistic model.

Brief Biography:



Zbigniew Suraj received a PhD from the University of Warsaw in mathematics and D.Sc. (habilitation) in the field of computer science at the Institute of Computer Science of the Polish Academy of Sciences in Warsaw. He is a titular professor in Poland. He is a Full Professor at the University of Rzeszów, Poland. He is also the Head of the Department of Computer Science at the University. He visited many

universities in Europe (Amsterdam, Bratislava, Kiev, Sofia, Uppsala), West Asia (Thuwal), and Canada (Winnipeg). He is a Member of the Editorial Board of the Transactions on Rough Sets (Springer) and International Journal of Rough Sets and Data Analysis (IGI Global). He was an editor and co-editor of many special issues of Fundamenta Informaticae (IOS Press) and edited books, as well as two monographs “Rough Computing: theories, technologies and applications” (IGI Global, 2008) and “Rough Sets and Intelligent Systems - Professor Zdzisław Pawlak in Memoriam” (Springer, 2013). He is the co-author of the monograph “Inhibitory Rules in Data Analysis” (Springer, 2009), as well as a co-author of several books in Polish. He has published over 200 scientific papers in prestigious journals and conference proceedings. He is the leader of Rough Set and Petri Net Research Group. His main research interests are focused on the modeling and analysis of intelligent systems, knowledge representation, approximate reasoning, fuzzy sets, rough sets, Petri nets, and advanced data mining techniques including process mining. He has organized many domestic and international conferences. He is a member of the steering/program committee of many international conferences concerning rough sets, concurrency, data mining including CS&P, DATA, IJCRS, ISDA, ISMIS, PReMI, RSFDGrC, RSKT. He is a senior Member of the International Rough Set Society and a Member of the Gesellschaft für Informatik Special Interest Group FG 0.0.1 Petri Nets and Related System Models (Germany), and others. He received a number of awards for scientific achievements in the field of computer science, including the individual award of the Minister of Science, Higher Education and Technology, and the team award of the Ministry of National Education in Poland.

Contents

Robot Modeling and Control Systems

| | |
|--|-----------|
| Study of the Effect of Magnetic Field and Pulsating Flow on the Thermoelectric Cooler Performance Using Fuzzy Logic Control | 3 |
| M. Sh. Nassar, A. A. Hegazi, and M. G. Mousa | |
| Two-Degree of Freedom Proportional Integral Derivative (2-DOF PID) Controller for Robotic Infusion Stand | 13 |
| Ahmad Taher Azar, Hossam Hassan, Mohd Saiful Akmal Bin Razali, Gabriel de Brito Silva, and Hedaya Rafat Ali | |
| Ultrasound Transducer Quality Control and Performance Evaluation Using Image Metrics | 26 |
| Amr A. Sharawy, Kamel K. Mohammed, Mohamed Aouf, and Mohammed A.-M. Salem | |
| Comparative Study of Two Level and Three Level PWM-Rectifier with Voltage Oriented Control | 40 |
| Arezki Fekik, Hakim Denoun, Ahmad Taher Azar, Mohamed Lamine Hamida, Mustapha Zaouia, and Nabil Benyahia | |
| New Control Schemes for Fractional Chaos Synchronization | 52 |
| Adel Ouannas, Giuseppe Grassi, Ahmad Taher Azar, and Shikha Singh | |
| Self-balancing Robot Modeling and Control Using Two Degree of Freedom PID Controller | 64 |
| Ahmad Taher Azar, Hossam Hassan Ammar, Mohamed Hesham Barakat, Mahmood Abdallah Saleh, and Mohamed Abdallah Abdelwahed | |
| Fractional Order Two Degree of Freedom PID Controller for a Robotic Manipulator with a Fuzzy Type-2 Compensator | 77 |
| Ahmad Taher Azar and Fernando E. Serrano | |

| | |
|---|------------|
| Fuzzy Compensator of the Stator Resistance Variation of the DTC Driven Induction Motor Using Space Vector Modulation | 89 |
| Fouzia Benmessaoud, Abdesselem Chikhi, and Sebti Belkacem | |
| Classification Techniques for Wall-Following Robot Navigation: A Comparative Study | 98 |
| Sarah Madi and Riadh Baba-Ali | |
| A New Control Scheme for Hybrid Chaos Synchronization | 108 |
| Adel Ouannas, Giuseppe Grassi, Ahmad Taher Azar, and Ahlem Gasri | |
| Integrated Multi-sensor Monitoring Robot for Inpatient Rooms in Hospital Environment | 117 |
| Lamia Nabil Mahdy, Kadry Ali Ezzat, and Aboul Ella Hassanien | |
| Comparing Multi-class Approaches for Motor Imagery Using Renyi Entropy | 127 |
| Sahar Selim, Manal Tantawi, Howida Shedeed, and Amr Badr | |
| Sensitivity Improvement of Micro-diaphragm Deflection for Pulse Pressure Detection | 137 |
| Amr A. Sharawi, Mohamed Aouf, Ghada Kareem, and Abdelhaleim H. Elhag Osman | |
| Active Suspension System Design Using Fuzzy Logic Control and Linear Quadratic Regulator | 152 |
| Ahmed A. Abdeen, Khalil Ibrahim, and Abo-Bakr M. Nasr | |
| Machine learning methodology and applications | |
| Prediction of Football Matches' Results Using Neural Networks | 169 |
| Roger Achkar, Ibraheem Mansour, Michel Owayjan, and Karim Hitti | |
| Multi-class Support Vector Machine Training and Classification Based on MPI-GPU Hybrid Parallel Architecture | 179 |
| I. Elgarhy, H. Khaled, Rania El Gohary, and H. M. Faheem | |
| Supervised Classification Techniques for Identifying Alzheimer's Disease | 189 |
| Yasmeen Farouk and Sherine Rady | |
| Supervised Classification of Cancers Based on Copy Number Variation | 198 |
| Sanaa Fekry Abed Elsadek, Mohamed Abd Allah Makhoulouf, and Mohamed Amal Aldeen | |
| On Selection of Relevant Fuzzy Implications in Approximate Reasoning | 208 |
| Zbigniew Suraj | |

Sentiment Analysis and Arabic Text Mining

| | |
|--|-----|
| Expanding N-grams for Code-Switch Language Models | 221 |
| Injy Hamed, Mohamed Elmahdy, and Slim Abdennadher | |

| | |
|---|-----|
| A Sentiment Analysis Lexical Resource and Dataset for Government Smart Apps Domain | 230 |
| Omar Alqaryouti, Nur Siyam, and Khaled Shaalan | |

| | |
|---|-----|
| Pre-trained Word Embeddings for Arabic Aspect-Based Sentiment Analysis of Airline Tweets | 241 |
| Mohammed Matuq Ashi, Muazzam Ahmed Siddiqui, and Farrukh Nadeem | |

| | |
|---|-----|
| Segmentation Tool for Hadith Corpus to Generate TEI Encoding | 252 |
| Hajer Maraoui, Kais Haddar, and Laurent Romary | |

| | |
|--|-----|
| ARARSS: A System for Constructing and Updating Arabic Textual Resources | 261 |
| Abdulmohsen Al-Thubaity and Muneera Alhoshan | |

Swarm Optimizations and Applications

| | |
|---|-----|
| Face Recognition Based on Grey Wolf Optimization for Feature Selection | 273 |
| Abd AL-BastRashed Saabia, TarekAbd El-Hafeez, and Alaa M. Zaki | |

| | |
|---|-----|
| Discrete Grey Wolf Optimization for Shredded Document Reconstruction | 284 |
| H. A. Badawy, E. Emary, Mohamed Yassien, and Mahmoud Fathi | |

| | |
|---|-----|
| Chaotic Bird Swarm Optimization Algorithm | 294 |
| Fatma Helmy Ismail, Essam H. Houssein, and Aboul Ella Hassanien | |

| | |
|---|-----|
| Spherical Local Search for Global Optimization | 304 |
| M. A. El-Shorbagy and Aboul Ella Hassanien | |

| | |
|--|-----|
| Automatic White Blood Cell Counting Approach Based on Flower Pollination Optimization Multilevel Thresholding Algorithm | 313 |
| Shahd T. Mohamed, Hala M. Ebeid, Aboul Ella Hassanien, and Mohamed F. Tolba | |

Deep Learning and Cloud Computing

| | |
|---|-----|
| Improving Citation Sentiment and Purpose Classification Using Hybrid Deep Neural Network Model | 327 |
| Abdallah Yousif, Zhendong Niu, Ally S. Nyamawe, and Yating Hu | |

| | |
|---|-----|
| A Convolutional Neural Network Model for Emotion Detection from Tweets | 337 |
| Eman Hamdi, Sherine Rady, and Mostafa Aref | |

| | |
|--|-----|
| Aquarium Family Fish Species Identification System Using Deep Neural Networks | 347 |
| Nour Eldeen M. Khalifa, Mohamed Hamed N. Taha, and Aboul Ella Hassanien | |
| AMS: Adaptive Migration Scheme in Cloud Computing | 357 |
| Nesma Ashry, Heba Nashaat, and Rawya Rizk | |
| Fully Homomorphic Encryption with AES in Cloud Computing Security | 370 |
| Yasmin Alkady, Fifi Farouk, and Rawya Rizk | |
| Deep Learning for Satellite Image Classification | 383 |
| Mayar A. Shafaey, Mohammed A.-M. Salem, H. M. Ebied, M. N. Al-Berry, and M. F. Tolba | |
| Information Security, Hiding, and Biometric Recognition | |
| Fake Reviews Detection Under Belief Function Framework | 395 |
| Malika Ben Khalifa, Zied Elouedi, and Eric Lefèvre | |
| On Mixing Iris-Codes | 405 |
| Randa F. Soliman, Mohamed Amin, and Fathi E. Abd El-Samie | |
| Interest Points Detection of 3D Mesh Model Using K Means and Shape Curvature | 415 |
| Mourad R. Mouhamed, Mona M. Soliman, Ashraf A. Darwish, and Aboul Ella Hassanien | |
| Two-Factor Authentication Scheme Using One Time Password in Cloud Computing | 425 |
| Samar H. El-sherif, Rabab F. Abdel-kader, and Rawya Y. Rizk | |
| Ear Biometric Recognition Using Gradient-Based Feature Descriptors | 435 |
| Hammam A. Alshazly, M. Hassaballah, Mourad Ahmed, and Abdelmgeid A. Ali | |
| A Secure Mutual Authentication Scheme with Perfect Forward-Secrecy for Wireless Sensor Networks | 446 |
| Mohamed M. Mansour, Fatty M. Salem, and Elsayed M. Saad | |
| Personal Identification Based on Mobile-Based Keystroke Dynamics . . . | 457 |
| Alaa Tharwat, Abdelhameed Ibrahim, Tarek Gaber, and Aboul Ella Hassanien | |

Data Mining, Visualization and E-learning

| | |
|--|-----|
| Factors Affecting Students' Acceptance of E-Learning System in Higher Education Using UTAUT and Structural Equation Modeling Approaches | 469 |
| Said A. Salloum and Khaled Shaalan | |
| Adoption of E-Book for University Students | 481 |
| Said A. Salloum and Khaled Shaalan | |
| A Predictive Model for Seminal Quality Using Neutrosophic Rule-Based Classification System | 495 |
| Sameh H. Basha, Alaa Tharwat, Khaled Ahmed, and Aboul Ella Hassanien | |
| Robust Simulation and Visualization of Satellite Orbit Tracking System | 505 |
| Kadry Ali Ezzat, Lamia Nabil Mahdy, Aboul Ella Hassanien, and Ashraf Darwish | |
| A Novel Rough Sets Positive Region Based Parallel Multi-reduction Algorithm | 515 |
| Guangyao Dai, Tongbang Jiang, Yonglin Mu, Nanxun Zhang, Hongbo Liu, and Aboul Ella Hassanien | |
| Automatic Counting and Visual Multi-tracking System for Human Sperm in Microscopic Video Frames | 525 |
| Nour Eldeen M. Khalifa, Mohamed Hamed N. Taha, and Aboul Ella Hassanien | |
| Intelligent Systems | |
| Arabian Horse Identification System Based on Support Vector Machines | 535 |
| Ayat Taha, Ashraf Darwish, and Aboul Ella Hassanien | |
| Automatic Sheep Weight Estimation Based on K-Means Clustering and Multiple Linear Regression | 546 |
| Aya Salama Abdelhady, Aboul Ella Hassanien, Yasser Mahmoud Awad, Moataz El-Gayar, and Aly Fahmy | |
| A Simulation-Based Optimization Approach for Assessing Sustainability in a Multi-construction Projects Environment | 556 |
| Areej M. Zaki, Hisham M. Abdelsalam, and Ihab A. El-Khodary | |
| Detection of Water Safety Conditions in Distribution Systems Based on Artificial Neural Network and Support Vector Machine | 567 |
| Hadi Mohammed, Ibrahim A. Hameed, and Razak Seidu | |

| | |
|---|------------|
| Clustering Stock Markets for Balanced Portfolio Construction | 577 |
| Omar Alqaryouti, Tarek Farouk, and Nur Siyam | |
| An Improved Cache Invalidation Policy in Wireless Environment Cooperate with Cache Replacement Policy Based on Genetic Programming | 588 |
| Adel El-Zoghabi and Amro G. El Shenawy | |
| Adopting Non-linear Programming to Select Optimum Privacy Parameters for Multi-parameters Perturbation Algorithm for Data Privacy Improvement in Recommender Systems | 603 |
| Reham Kamal, Wedad Hussein, and Rasha Ismail | |
| Content Based Image Retrieval Using Local Feature Descriptors on Hadoop for Indoor Navigation | 614 |
| Heba Gaber, Mohammed Marey, Safaa Amin, Howida Shedeed, and Mohamed F. Tolba | |
| Design and Implementation of Embedded System for Nuclear Materials Cask in Nuclear Newcomers | 624 |
| M. I. Youssef, M. Zorkany, G. F. Sultan, and Hassan F. Morsi | |
| Combined Features for Content Based Image Retrieval: A Comparative Study | 634 |
| Nora Youssef, Alsayed Algergawy, Ibrahim F. Moawad, and EL-Sayed M. EL-Horbaty | |
| PLS-SEM in Information Systems Research: A Comprehensive Methodological Reference | 644 |
| Mostafa Al-Emran, Vitaliy Mezhyuev, and Adzhar Kamaludin | |
| Automatic Segmentation of Chromosome Cells | 654 |
| Reem Bashmail, Lamiaa A. Elrefaei, and Wadee Alhalabi | |
| Cube Satellite Failure Detection and Recovery Using Optimized Support Vector Machine | 664 |
| Sara Abdelghafar, Ashraf Darwish, and Aboul Ella Hassanien | |
| Author Index | 675 |