# Table of Contents

## Keynote
Similarity Searches on Non-ordered Discrete Data for Emerging Computer Applications: Why and How  
*Qiang Zhu*  .................................................................................................................. 1

## Security and Networks
Composition of Cyberattack Models  
*Katia P. Mayfield, Mikel D. Petty, John A. Bland, Tymaine S. Whitaker*  ............................................. 3
Cybersecurity for Industrial Control Systems: Progress and Challenges  
*James Graham, Jeffrey Hieb, Patricia Ralston*  ......................................................................... 9
Dynamic Load Balancing in Heterogeneous Computing Systems With Central-Server Node Model  
*Satish Penmatsa, Gurdeep Hura*  .......................................................................................... 14
Reliable Multicast Protocol Using Infiniband Remote Direct Memory Access  
*Shah Mansoor, J. Michael Meehan*  ..................................................................................... 20

## Machine Learning Algorithms
Estimation of Correlation between Multiple Parameters and Sleep Satisfaction Using Deep Neural Network for Pleasant Sleeping Support System  
*Seung-Il Cho, Muneki Yasuda, Minami Tsuchiya, Tomochika Harada, Atsushi Tanaka, Michio Yokoyama*  .............. 26
A Three-Stage Object Detection Framework Using Compact Features and Deep CNN  
*Liang Peng, Hao Qian*  .................................................................................................... 31
Real-time Action Recognition with Deep Features and Dissimilarity-based Training of Specialized Module Networks  
*Marian K. Y. Boktor, Ahmad Al-Kabbany, Radwa Khalil, Said El-Khamy*  ........................................ 38
A Seed Segmentation Contour Generator and Counter  
*Chaney Courtney, Mitchell Neilsen*  .................................................................................... 45

## Artificial Intelligence: Applications
Automatic Red-Eye Detection in Consumer Photographs  
*Liang Peng, Hao Qian*  .................................................................................................... 53
Towards Modeling Gestures for Non-Emotional Conversational Interaction by Humanoid Robots  
*Aditi Singh, Arvind K. Bansal*  ........................................................................................... 59
Proximal Search of Image Segments in CBIR  
*Umer Rashid, Muhammad Azad Bhatti, Mubashar Mushtaq*  .................................................. 65
Route Search Method for Autonomous Mobile Robots Using Machine Learning  
*Mitsuo Wakatsuki, Seiya Okubo, Tetsuro Nishino*  .................................................................... 71

## Computer Applications
The Design and Development of a Web-based Ticket Management Solution using PhoneGap  
*Quan Yuan, Melody Snitker, Haesun Lee, Ilhyun Lee*  ................................................................ 77
Flexible Architecture for Analysis of Water Control Structures  
*Chendi Cao, Mitchell Neilsen*  ............................................................................................ 83
Measuring Method of Volume Condition for Music Listening Experiment Using Equal-Loudness-Level Contours  
*Tomoki Maeda, Teruhisa Hochin, Hiroki Nomiya*  ...................................................................... 89
Practical Guide for the Implementation of Electronic Government Aligned with Peruvian Regulation
Mariuxi Bruzza, Manuel Tupia ................................................................. 97

Data Mining
Influence Modeling, Volume Prediction and Sentiment Analysis of Short Texts on Twitter
Trung T Nguyen, Amartya Hatua, Asheshbabu Pothuraju, Andrew H Sung .................................................. 104

GLCM based Skin Diseases Classification using Texture Features
Zafar Iqbal, Saqib Iqbal, Mubashar Mushtaq, Ghazanfar Farooq, Khalid Saleem ................................................ 112

Data Mining Applications on Biomechanical Data
Patrick Rider, Qin Ding ................................................................. 118

Effect of Reality of Pictures in a Horror Game on Feelings of Fear
Kotoko Yamaguchi, Teruhisa Hochin, Hiroki Nomiyaa, Yukiko Nishizaki ................................................ 124

Software, Tools and Applications
Artificial Intelligence Techniques in Cancer Diagnosis- Approach to Healthcare
Jaskarn Singh, Narayan Debnath .............................................................. 132

Computer Based Career Guidance: An Ontology Use for Student Profiling
Mohammed Abdellah Alimam, Hamid Sehiouer, Mohammed Amine Alimam, Mohammad Cherkaooui, Nasereddin Hebah .............................................................. 138

Creating a Compiler Optimized Inlineable Implementation of Intel SVM ONED SIMD Intrinsics
Promyk Zamojski, Raafat Elfouly .............................................................. 146

System Architecture of Mobile Application for Emergency Medical Situation and Continuous Monitoring
Rashmi Mandal Vijayvergiya, Partha Ghosh, Lalmohan Dutta, Runa Ganguli, Narayan Debnath, Soumya Sen ........ 152

F2BPM: A Framework to Evaluate the Quality of Conceptual Models of Business Processes
Narayan Debnath, Carlos Salgado, Mario Peralta, Daniel Riesco, Lorena Baigorria, Germán Montejano, Ilhyun Lee, Haesun Lee .............................................................. 157

Software Engineering
Architecture for Self-Sovereign Ditigal Identity
Kalman C. Toth, Alan Anderson-Priddy .................................................. 163

Effective Practices for Refactoring a Legacy Java Application into a Microservice Architecture
Fabio M. Manzano, Mario A. T. Buratto, Amadeu Bonfante, George H. R. Costa, Thomas Phelan ........... 169

Defect Classification and Analysis in a Small Company
Eric Abuta, Jeff Tian .............................................................. 175

Miner and Jeweler: Experience of Teaching an Online Mobile App Development Course
Ziping Liu, Xuesong Zhang .............................................................. 183

Machine Learning Applications
Improvement of Similar Image Retrieval Considering Temporal Changes of Music Impression
Yuto Shinjo, Teruhisa Hochin, Hiroki Nomiyaa ........................................ 189

Automated Classification System of Giant White Corn using Image Processing and Supervised Techniques
Gabriela Gónzales, Juan Gutiérrez-Caardenas ......................................... 195

Estimation of Plasma Emission Transition Using Clustered Time Series Data
Shota Nakagawa, Teruhisa Hochin, Hiroki Nomiyaa, Hideya Nakashii ................................................ 201

A Trust Model for Bitcoin using Unsupervised Machine Learning
Ahmed Bagalwi, Assaad Algarni, Kendall E. Nygard ........................................ 207

Author Index 215