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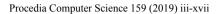




Table of Contents

23rd KES International Conference on Knowledge-Based and Intelligent Information & Engineering Systems KES2019	
I.J. Rudas, C. Janos, C. Toro, J. Botzheim, R.J. Howlett, and L.C. Jain	1
DynGRAR: A dynamic approach to mining gradual relational association rules Diana-Lucia Miholca, and Gabriela Czibula	10
S PRAR: A novel relational association rule mining classification model applied for academic performance prediction Gabriela Czibula, Andrei Mihai, and Liana Maria Crivei	20
String-based Multinomial Naïve Bayes for Emotion Detection among Facebook Diabetes Community Vimala Balakrishnan, and Wandeep Kaur	30
On a cooperative truck-and-drone delivery system Gloria Cerasela Crişan, and Elena Nechita	38
Using self-organizing maps for unsupervised analysis of radar data for nowcasting purposes Gabriela Czibula, Andrei Mihai, Eugen Mihuleţ, and Daniel Teodorovici	48
Emotion Mining in Social Media Data Jaishree Ranganathan, and Angelina Tzacheva	58
A Novel Multi-Objective Immune Memetic Algorithm for the Frequency Assignment Problem Malika Bessedik, Fatima Benbouzid-SiTayeb, Abd Errahmane Kiouche, and Mohamed Reda Keddar	67
Anomaly-based Behavioral Detection in Mobile Ad-Hoc Networks Rahma Meddeb, Farah Jemili, Bayrem Triki, and Ouajdi Korbaa	77
Towards automated joining element design Derk Hendrik Dominick Eggink, Marco Wilhelm Groll, Daniel F. Perez-Ramirez, Johannes Biedert, Christoph Knödler, and Patrick Papentin.	87
DynFloR: A Flow Approach for Data Delivery Optimization in Multi-Robot Network Patrolling Vlad-Sebastian Ionescu, Zsuzsanna Oneţ-Marian, Marin-Georgian Bădiţă, Gabriela Czibula, Mihai-Ioan Popescu, Jilles S. Dibangoye, and Olivier Simonin	97
Structural Analysis of Sparse Neural Networks Julian Stier, and Michael Granitzer	107
Bach 2.0 - generating classical music using recurrent neural networks Alexandru-Ion Marinescu	117
The Proposal of Undersampling Method for Learning from Imbalanced Datasets Małgorzata Bach, Aleksandra Werner, and Mateusz Palt	125
Coffee Leaf Disease Recognition Based on Deep Learning and Texture Attributes Lucas Ximenes Boa Sorte, Carolina Toledo Ferraz, Francisco Fambrini, Roseli dos Reis Goulart, and José Hiroki Saito	135

iv Contents

iAssistMe - Adaptable Assistant for Persons with Eye Disabilities Cristina Georgiana Calancea, Camelia-Maria Milut, Lenuta Alboaie, and Adrian Iftene	145
Data protection in cloud computing: A Survey of the State-of-Art Sonia amamou, Zied trifa, and Maher khmakhem	155
Interlinking RDF-based datasets: A structure-based approach Pierre-Henri Paris, Fayçal Hamdi, and Samira Si-said Cherfi	162
Computational Intelligence for Solving Difficult Transportation Problems Gloria Cerasela Crișan, Laszlo Barna Iantovics, and Elena Nechita	172
A Model Based on LSTM Neural Networks to Identify Five Different Types of Malware Eduardo de O. Andrade, José Viterbo, Cristina N. Vasconcelos, Joris Guérin, and Flavia Cristina Bernardini	182
Relationships among information items of meeting minutes in a minutes management system MRS Hideaki Ito, Tsuyoshi Taki, Junichi Hasegawa, and Kyoko Raita	192
AIM: Designing a language for AI models Ionuţ Cristian Pistol, and Andrei Arusoaie.	202
Contribution of Data Augmentation for the Prenventive Detection of Vocal Fold Precancerous Lesions Anis Ben Aicha	212
Design a Data Warehouse Schema from Document-Oriented database Senda Bouaziz, Ahlem Nabli, and Faiez Gargouri.	221
Investigating the effects of lossy compression on age, gender and alcoholic information in EEG signals Binh Nguyen, Wanli ma, and Dat Tran	231
Iris Image Classification Using SIFT Features Ioan Păvăloi, and Anca Ignat	241
Feature selection on database optimization for Wi-Fi fingerprint indoor positioning Guilherme Henrique Apostolo, Igor Garcia Ballhausen Sampaio, and José Viterbo	251
A quantum genetic algorithm for pickup and delivery problems with coalition formation Yara Rizk, and Mariette Awad	261
A new Transparent Ensemble Method based on Deep learning Naziha Sendi, Nadia Abchiche-Mimouni, and Farida Zehraoui	271
A Real-Time Lazy Eye Correction Method for Low Cost Webcams Robert Kerr, and Muhammad Marwan Muhammad Fuad	281
Community detection in multi-relational social networks based on relational concept analysis Soumaya Guesmi, Chiraz Trabelsi, and Chiraz Latiri	291
Fuzzy Decision Efficiency for Multiprocessor Architecture Configuration Najar Yousra, and Ben Ahmed Samir.	301
Bı-CoмDet: Community Detection in Bipartite Networks Haifa Gmati, Amira Mouakher, and Inès Hilali-Jaghdam	313
Bob - A General Culture Game with Voice Interaction Marta Filimon, Adrian Iftene, and Diana Trandabăţ	323
An empirical analysis of the correlation between the motifs frequency and the topological properties of complex networks Bogdan-Eduard-Mădălin Mursa, Anca Andreica, and Laura Dioşan	333

Contents v

A Structure Based Multiple Instance Learning Approach for Bacterial Ionizing Radiation Resistance Prediction Manel Zoghlami, Sabeur Aridhi, Mondher Maddouri, and Engelbert Mephu Nguifo	42
A Deep Learning-based Ranking Approach for Microblog Retrieval Ben Ltaifa Ibtihel, Hlaoua Lobna, and Ben Romdhane Lotfi	52
Spiking Neural Network to Extract Frequent Words from Japanese Speech Data Kenta Morita, Haruhiko Takase, Naoki Morita, Hiroharu Kawanak, and Hidehiko Kita	63
A Web Service Security Governance Approach Based on Dedicated Micro-services Sarra Abidi, Mehrez Essafi, Chirine Ghedira Guegan, Myriam Fakhri, Hamad Witti, and Henda Hjjami Ben Ghezala	72
FCA-based Energy Aware-data Placement Strategy for Intensive Workflow in Cloud Computing. Rihab Derouiche, Zaki Brahmi, and Mohamed Mohsen Gammoudi	87
A survey on different human-machine interactions used for controlling an electric wheelchair Agnès Ghorbel, Nader Ben Amor, and Mohamed Jallouli	98
A Hybrid Simulated Annealing Approach for the Patient Bed Assignment Problem Khouloud Dorgham, Issam Nouaouri, Hajer Ben-Romdhane, and Saoussen Krichen	08
Layered neural-based locomotion for biped robot movement with carrying dynamic payload Azhar Aulia Saputra, Janos Botzheim, Indra Adji Sulistijono, and Naoyuki Kubota	18
A New Method to Identify Short-Text Authors Using Combinations of Machine Learning and Natural Language Processing Techniques Biveeken Vijayakumar, and Muhammad Marwan Muhammad Fuad	28
Enhancing Deep Learning with Semantics: an application to manufacturing time series analysis Xin Huang, Cecilia Zanni-Merk, and Bruno Crémilleux	37
Greedy Best-First Search for the Optimal-Size Sorting Network Problem Cristian Frăsinaru, and Mădălina Răschip	47
Fair and Effective Elevator Car Dispatching Method in Elevator Group Control System using Cameras Tomoki Yamauchi, Rina Ide, and Toshiharu Sugawara	55
Energy-Efficient Strategies for Multi-Agent Continuous Cooperative Patrolling Problems Lingying Wu, Ayumi Sugiyama, and Toshiharu Sugawara	65
Using behavioral biometric sensors of mobile phones for user authentication Nurhak Karakaya, Gülfem Işıklar Alptekin, and Özlem Durmaz İncel	75
Enhancing Question Retrieval in Community Question Answering Using Word Embeddings Nouha Othman, Rim Faiz, and Kamel Smaïli	85
Implementing Industry 4.0 Asset Administrative Shells in Mini Factories Alejandro Seif, Carlos Toro, and Humza Akhtar	95
Automatic wide field registration and mosaicking of OCTA images using vascularity information Macarena Díaz, Joaquim de Moura, Jorge Novo, and Marcos Ortega	05
In Underground Vehicular Radio Channel Characterization Hamou Chehri, Abdellah Chehri, and Nadir Hakem	14
Overlapping Chromosome Segmentation using U-Net: Convolutional Networks with Test Time Augmentation Hariyanti Mohd Saleh, Nor Hidayah Saad, and Nor Ashidi Mat Isa	24
A New Architecture for Cognitive Internet of Things and Big Data Mohamed Saifeddine Hadj Sassi, Faiza Ghozzi Jedidi, and Lamia Chaari Fourati	34

vi Contents

Market efficiency is truly enhanced in sub-second trading market Mieko Tanaka-Yamawaki, and Masanori Yamanaka
Deep Learning Approach to Biogeographical Ancestry Inference Yue Qu, Dat Tran, and Wanli Ma
Modular Ontology Learning with Topic Modelling over Core Ontology Ziwei Xu, Mounira Harzallah, Fabrice Guillet, and Ryutaro Ichise
Ontology population with deep learning-based NLP: a case study on the Biomolecular Network Ontology Ali Ayadi, Ahmed Samet, François de Bertrand de Beuvron, and Cecilia Zanni-Merk
Visualization of Programming Skill Structure by Log-Data Analysis with Decision Tree Shinichi Oeda, and Mutsumi Chieda
Knowledge-Based Architecture for Recognising Activities of Older People Mohamed Bennasar, Blaine A. Price, Avelie Stuart, Daniel Gooch, Ciaran McCormick, Vikram Mehta, Linda Clare, Amel Bennaceur, Jessica Cohen, Arosha K. Bandara, Mark Levine, and Bashar Nuseibeh.
Retinal vascular analysis in a fully automated method for the segmentation of DRT edemas using OCT images Joaquim de Moura, Jorge Novo, Pablo Charlón, María Isabel Fernández, and Marcos Ortega
Degenerate Unmixing Estimation Technique (DUET) for Fetal ECG Blind Source Separation Dzati Athiar Ramli, Fong Mei Ling, and Norsalina Hassan
Abnormal Situations Interpretation in Industry 4.0 using Stream Reasoning Franco Giustozzi, Julien Saunier, and Cecilia Zanni-Merk
An Ontology-based Approach for Failure Classification in Predictive Maintenance Using Fuzzy C-means and SWRL Rules Qiushi Cao, Ahmed Samet, Cecilia Zanni-Merk, François de Bertrand de Beuvron, and Christoph Reich
Relational Model for Parameter Description in Automatic Semantic Web Service Composition Paul Diac, Liana Ţucăr, and Andrei Netedu.
Fully automatic multi-temporal land cover classification using Sentinel-2 image data Sergio Baamonde, Martiño Cabana, Neftalí Sillero, Manuel G. Penedo, Horacio Naveira, and Jorge Novo
Prediction of stress levels with LSTM and passive mobile sensors Yasin Acikmese, and S. Emre Alptekin
Speech spoofing countermeasures based on source voice analysis and machine learning techniques Raoudha Rahmeni, Anis Ben Aicha, and Yassine Ben Ayed
Data quality in ETL process: A preliminary study Manel Souibgui, Faten Atigui, Saloua Zammali, Samira Cherfi, and Sadok Ben Yahia
Hybrid System for Information Extraction from Social Media Text: Drug Abuse Case Study Ferdaous Jenhani, Mohamed Salah Gouider, and Lamjed Ben Said
Machine Learning Based Approach to Assess Denoised Speech Anis Ben Aicha
Discovery of closed spatio-temporal sequential patterns from event data Piotr S. Maciąg, Marzena Kryszkiewicz, and Robert Bembenik
Non-Functional Norms Specification and Verification Approach for Normative Multi-agents Systems Ezzine Missaoui, Belhassen Mazigh, Vincent Hilaire, and Sami Bhiri.

Contents vii

Hércules A. do Prado, Elaine Coutinho Marcial, Aluizio Haendchen Filho, Edilson Ferneda, and Roseane Salvio
Dealing with Data Imbalance in Text Classification Cristian Padurariu, and Mihaela Elena Breaban
Ontology Alignment using Stable Matching Imene Ouali, Faiza Ghozzi, Raouia Taktak, and Mohamed Saifeddine Hadj Sassi
Specification of the data warehouse for the decision-making dimension of the Bid Process Information System Manual Zalari, Salaki, Zalari, and Salak Ban Waking
Manel Zekri, Sahbi Zahaf, and Sadok Ben Yahia
Essay Scoring Aluizio Haendchen Filho, Fernando Concatto, Jonathan Nau, Hércules A. do Prado, Diego Oscar Imhof, and Edilson Ferneda
MBOPS: Towards A Multidimensional Business Ontology based-Premodeling System Sonya Ouali, Mohamed Mhiri, and Faiez Gargouri
A pattern-based approach to a cell tracking ontology. Patryk Burek, Nico Scherf, and Heinrich Herre
Comparative Study of Arabic Stemming Algorithms for Topic Identification Marwa Naili, Anja Habacha Chaibi, and Henda Hajjami Ben Ghezala
Improvement of Watermarking-LEACH Algorithm Based on Trust for Wireless Sensor Networks Nejla Rouissi, Hamza Gharsellaoui, and Sadok Bouamama
Approximating consistency in pairwise comparisons Christopher Kuske, Michael Soltys, and Konrad Kułakowski
Deploying Health Campaign Strategies to Defend Against Social Engineering Threats Noelle Abe, and Michael Soltys.
CG Utilization for Creation of Regression Model Training Data in Deep Learning Tsukasa Kudo, and Ren Takimoto
Touch Panel Interface to Support Explanation of Pains by Choosing Options Yuta Okabe, Yoko Nishihara, and Ryosuke Yamanishi
A Method for Converting Onomatopoeic Words in Japanese Comics into Chinese Based on International Phonetic Alphabet Yihong Han, Yoko Nishihara, and Ryosuke Yamanishi
Verification method of reliability requirements Satsuki Yamada, Takayuki Omori, and Atsushi Ohnishi
The influence of the ice field on the seismic exploration in the Arctic region Polina Stognii, Igor Petrov, and Alena Favorskaya
Introducing intents to the OODA-loop Johan Silvander, and Lars Angelin
Chance Discovery and Analysis of Data via Multi-Agent Logics Vladimir V. Rybakov
On framework development for the dynamic prosumer coalition in a smart grid and its evaluation by analytic tools Sreenithya Sumesh, Aneesh Krishna, Vidyasagar Potdar, and Shastri Nimmagadda
STECHILIVA SUITIESII. ATIEESII KTISIITA. VIUVASABAI POLUAL ARU STASLII INIMMABAUUA

viii Contents

A Predictive Workload Balancing Algorithm in Cloud Services Mahdee Jodayree, Mahmoud Abaza, and Qing Tan	902
Tournament indices of inconsistency Jacek Szybowski	913
AI Service System Development Using Enterprise Architecture Modeling Hironori Takeuchi, and Shuichiro Yamamoto	923
Animal species recognition in the wildlife based on muzzle and shape features using joint CNN Margarita Favorskaya, and Andrey Pakhirka	933
Combined approach to forecasting of manufacturing system target indicators in a changing external environment Zinaida Avdeeva, Elena Grebenyuk, and Svetlana Kovriga	943
Towards Novel Video Steganography Approach for Information Security Ahlem Fatnassi, Hamza Gharsellaoui, and Sadok Bouamama	953
Exploiting Model Checking for Mobile Botnet Detection Cinzia Bernardeschi, Francesco Mercaldo, Vittoria Nardone, and Antonella Santone	963
Aspect Analysis towards ArchiMate Diagrams Shuichiro Yamamoto, Qiang Zhi, and Zhengshu Zhou	973
Analysis of brain NMR images for age estimation with deep learning Alberto Rossi, Gioele Vannuccini, Paolo Andreini, Simone Bonechi, Giorgia Giacomini, Franco Scarselli, and Monica Bianchini	981
Design and Development of a Real Time Vision Enhancement System using Image Fusion – an Algorithmic Approach Sriwathi Nimmagadda, Shastri L Nimmagadda, and Neel Mani	990
Frost Forecast using Machine Learning - from association to causality Liya Ding, Kosuke Noborio, and Kazuki Shibuya	1001
Usage of simulators to boost marine corps learning Kalle Saastamoinen, Antti Rissanen, and Riku Linnervuo	1011
Intelligent Method of Computer-Aided Design and Checking of Real-Time Spacecraft Control Algorithms Andrey Tyugashev, and Sergei Orlov.	1019
Comparison measures and their usage with examples Kalle Saastamoinen	1027
Dynamic Microservices to Create Scalable and Fault Tolerance Architecture Mihai Baboi, Adrian Iftene, and Daniela Gîfu	1035
Energy Consumption Metrics for Mobile Device Dynamic Malware Detection Fausto Fasano, Fabio Martinelli, Francesco Mercaldo, and Antonella Santone	1045
Potentials of Digital Business Models in the retail industry – Empirical Results from European Experts Ralf Härting, Christopher Reichstein, Patrick Laemmle, and Alexander Sprengel	1053
Genetic-based Multi-criteria Workflow Scheduling with Dynamic Resource Provisioning in Hybrid Large Scale Distributed Systems Haithem Hafsi, Hamza Gharsellaoui, and Sadok Bouamama	1063
Towards A Knowledge Base for Software Developers to Choose Suitable Traceability Techniques Haruhiko Kaiya, Atsuo Hazeyama, Shinpei Ogata, Takao Okubo, Nobukazu Yoshioka, and Hironori Washizaki	1075

Contents ix

Restoring Consistency in Ontological Multidimensional Data Models via Weighted Repairs Enamul Haque, and Fei Chiang
Numerical simulation of cone object destruction under a short high-energy pulse Katerina Beklemysheva, Alexey Ermakov, and Alena Favorskaya
PSO-based Dynamic Distributed Algorithm for Automatic Task Clustering in a Robotic Swarm Ayari Asma, and Bouamama Sadok
A Study on the Improvement for a Student's Sleep-Phase with Wearable Devices Toshiki Ueda, and Mika Hayashida
STEM activities for exploring Mars using innovative e-learning Dana M. Barry, Hideyuki Kanematsu, Nobuyuki Ogawa, Katsuko Nakahira, Mahesh Banavar, and Seema Rivera
On Managing Contextual Knowledge of Digital Document Ecosystems, characterized by Alphanumeric Textual Data Shastri L Nimmagadda, Dengya Zhu, and Torsten Reiners
Design of a SWOT Analysis Model and its Evaluation in Diverse Digital Business Ecosystem Contexts Christine Namugenyi, Shastri L Nimmagadda, and Torsten Reiners.
On Modelling Big Data Guided Supply Chains in Knowledge-Base Geographic Information Systems Shastri L Nimmagadda, Torsten Reiners, and Lincoln C Wood
Automated inspection method for an STAMP/STPA - Fallen Barrier Trap at Railroad Crossing - Pan Yang, Rin Karashima, Kozo Okano, and Shinpei Ogata.
Three decades of paraconsistent annotated logics: a review paper on some applications Jair M. Abe, Kazumi Nakamatsu, and João I. da Silva Filho
Determination of the turning point of cache efficiency in computer networks with logic Ετ Avelino Palma Pimenta Junior, and Jair Minoro Abe
Specification of the data warehouse for the decision-making dimension of the Bid Process Information System Manel Zekri, Sahbi Zahaf, and Faiez Gargouri
Design Science Information System Framework for Managing the Articulations of Digital Agroecosystems Shastri L Nimmagadda, Amboge Samson, Neel Mani, and Torsten Reiners
A novel method for wave phenomena investigation Alena Favorskaya.
A New Approach Based On the Hybridization of Simulated Annealing Algorithm and Tabu Search to Solve the Static Ambulance Routing Problem Issam ZIDI, Mohammad Al-Omani, and Karim Aldhafeeri
Simulation course – A little bit something for everybody? Kalle Saastamoinen, and Antti Rissanen
Causal reasoning of emergency cases based on Fuzzy Cognitive Map Jiangnan Qiu, Wenjing Gu, and Guangyuan Wang
Edge Computing: Smart Identity Wallet Based Architecture and User Centric Syrine Sahmim, Hamza Gharsellaoui, and Sadok Bouamama
Application of Genetic Algorithms to Distributed Optimization Problems under Fuzzy Constraints Ghofrane Medini, and Sadok Bouamama

x Contents

Feature-based synchronization correction for multilevel watermarking of medical images Margarita Favorskaya, Eugenia Savchina, and Konstantin Gusev	126
Model Checking for Data Anomaly Detection Madalina G. Ciobanu, Fausto Fasano, Fabio Martinelli, Francesco Mercaldo, and Antonella Santone	127
A Method of Sentiment Polarity Identification in Financial News using Deep Learning Daisuke Katayama, Yasunobu Kino, and Kazuhiko Tsuda	128
Novel Validation Method for the R&D Project Status Visualization Hideki Hayashida, Masakazu Takahashi, and Hiroki Funashima	129
Factors that influence casino design: Exploration of knowledge-based ideas for introducing casinos into Japan Nozomi komiya, and Jun Nakamura	130
A Consideration of Evaluation Method of Sentiment Analysis on Social Listening Yasuto Nishiwaki, Yuji Yoshida, Takeshi Teramra, Atsushi Motoyama, and Kazuhiro Tsuda	131
A Standardization Method of Individual Rating Fluctuation in Social Listening Data Maki Johjima, Daisuke Sakamoto, Yasuto Nishiwaki, and Kazuhiko Tsuda	132
A Detection Method for Plagiarism Reports of Students Daisuke Sakamoto, and Kazuhiko Tsuda	132
Estimating the Supply and Demand Balance of the Market by exploring the Gross Profit Transition in E-commerce business. Tatsuya Ogura, and Kazuhiko Tsuda	133
A Method of Extracting and Classifying Local Community Problems from Citizen-Report Data using Text Mining Eiji Kano, Yoshikatsu Fujita, and Kazuhiko Tsuda	134
Feature Comparison of Hotel Reviews by Hotel Type using Dependency Graph Koji Tanaka, Koichi Tsujii, Takashi Ikoma, and Kazuhiko Tsuda	135
A New Hyper-Heuristic to Generate Effective Instance GA for the Permutation Flow Shop Problem Sarra Zohra Ahmed Bacha, Mohamed Walid Belahdji, Karima Benatchba, and Fatima Benbouzid-Si Tayeb.	136
Application of local binary patterns and cascade AdaBoost classifier for mice behavioural patterns detection and analysis Tobechukwu Agbele, Blessing Ojeme, and Richard Jiang	137
Improving genetic algorithm using arc consistency technic Meriem Zouita, Sadok Bouamama, and Kamel Barkaoui	138
Heuristic Algorithm for Generalized Function Matching Radu Stefan Mincu	139
A New Multi-Layer Distributed Approach for a Multi-objective Planning Problem Mouna Mnif, and Sadok Bouamama	140
Simulating Probabilistic Networks of Polarized Evolutionary Processors José Ángel Sánchez, and Fernando Arroyo	142
Dunuen: A User-Friendly Formal Verification Tool Giovanni Capobianco, Umberto Di Giacomo, Francesco Mercaldo, and Antonella Santone	143
Lung boundary detection for chest X-ray images classification based on GLCM and probabilistic neural networks Aleksandr Zotin, Yousif Hamad, Konstantin Simonov, and Mikhail Kurako	143

Contents xi

A Method of Data Augmentation for Classifying Road Damage Considering Influence on Classification Accuracy Haruki Tsuchiya, Shinji Fukui, Yuji Iwahori, Yoshitsugu Hayashi, Witsarut Achariyaviriya, and Boonserm Kijsirikul
Streaming Social Media Data Analysis for Events Extraction and Warehousing using Hadoop and Storm: Drug Abuse Case Study Ferdaous Jenhani, Mohamed Salah Gouider, and Lamjed Ben Said
A Concept of a Training Project IT Management System Tomasz Królikowski, and Walery Susłow
Contour-Aware Residual W-Net for Nuclei Segmentation Sushmita Das, Ankur Deka, Yuji Iwahori, M.K. Bhuyan, Takashi Iwamoto, and Jun Ueda
A refinement-based approach for verifying dynamic changes on time-aware processes Fairouz Fakhfakh
Measurements of Eye Movement and Teachers' Concentration during the Preparation of Teaching Materials Hideyuki Kanematsu, Dana M. Barry, Tasuya Shirai, Masashi Kawaguchi, Nobuyuki Ogawa,
Kuniaki Yajima, Katsuko T. Nakahira, Toshiro Kobayashi, and Michiko Yoshitake
Dynamically Detecting Security Threats and Updating a Signature-Based Intrusion Detection System's Database
Mutep Y AlYousef, and Nabih T Abdelmajeed
Prototype Design of Playback and Search System for Lecture Video Content using Google Cloud API Yoshimasa Ohnishi, Shin'nosuke Yamaguchi, Yoshiki Shimoikura, Kazunori Nishino, Hideki Kondo, and Akihiro Hayashi.
The dynamic reconfiguration approach for fault-tolerance web service composition based on multi-level VCSOP
Hela Fekih, Sabri Mtibaa, and Sadok Bouamama
Cost-benefit considerations for Data Analytics - An SME-Oriented Framework enhanced by a Management Perspective and the Process of Idea Generation Ralf-Christian Härting, and Alexander Sprengel
A New Hybrid Genetic Algorithm-based Approach for Critical Multiprocessor Real-Time Scheduling with Low Power Optimization
Ibrahim Gharbi, Hamza Gharsellaoui, and Sadok Bouamama
Applying Multi-Criteria Analysis of Electrically Powered Vehicles Implementation in Urban Freight Transport Kinga Kijewska, Stanislaw Iwan, and Krzysztof Małecki
Analysis of Learning Activities and Effects on Blended Lectures Shin'nosuke Yamaguchi, Hideki Kondo, Yoshimasa Ohnishi, and Kazunori Nishino
Detecting and Removing Specular Reflectance Components Based on Image Linearization Ryosuke Nakao, Yuji Iwahori, Yoshinori Adachi, Aili Wang, M.K. Bhuyan, and Boonserm Kijsirikul
A Big-Data-Analytics Framework for Supporting Classification of ADHD and Healthy Children via Principal Component Analysis of EEG Sleep Spindles Power Spectra Federica De Dea, Miloš Ajčević, Matteo Stecca, Caterina Zanus, Marco Carrozzi, Alfredo Cuzzocrea, and Agostino Accardo
Towards Knowledge Handling in Sustainable Management Domain Jarosław Wątróbski

xii Contents

Ontology Supporting Green Supplier Selection Process Jarosław Wątróbski	1
Knowledge Repository of Ontology Learning Tools from Text Agnieszka Konys	1
Methods Supporting Supplier Selection Processes – Knowledge-based Approach Agnieszka Konys	1
Evaluation of gravitational anomalies in the areas of strongest earthquakes based on GRACE satellite measurements Aleksandr Zotin, Konstantin Simonov, Aleksandr Matsulev, and Mikhail Kurako	1
SEAKER: A mobile digital forensics triage device Eric Gentry, and Michael Soltys	1
Information Retrieval System and Knowledge Base on Diseases Using Variables and Contexts in the Texts Teruaki Hayashi, and Yukio Ohsawa	1
Failure-enhanced evacuation training using a VR-based disaster simulator: A comparative experiment with simulated evacuees Hiroyuki Mitsuhara, Chie Tanimura, Junko Nemoto, and Masami Shishibori	1
The pottery skills and tacit knowledge of a maser: An analysis using eye-tracking data Jun Nakamura, and Sanetake Nagayoshi	1
A multi-agent model for planning hybrid software processes Włodzimierz Wysocki, and Cezary Orłowski	1
Visualization of Competence through Cooperative Education at NIT, Anan College Takashi Matsumoto, and Nariyuki Kawabata	1
How does the computer-based repository augment organizational memory of the failure learning activity in the Japanese company? Sanetake Nagayoshi, and Jun Nakamura	1
A Smart Public Security Strategy: The New Taipei City Technology Defense Plan Chun-Young Chang, Lin-Chien Chien, Yo-Hao Chang, En-Chun Kuo, and Yuh-Shyan Hwang	1
Toward the Cross-Institutional Data Integration From Shibboleth Federated LMS Nobukuni Hamamoto, Hiroshi Ueda, Masako Furukawa, Motonori Nakamura, Takeshi Nishimura, Shigetoshi Yokoyama, and Kazutsuna Yamaji	1
Operational Properties Investigation of The Flat-Plate Solar Collector with Poliuretane Foam Insulation K. Kaminski, P. Znaczko, M. Lyczko, T. Krolikowski, and R. Knitter	1
Tradeoff-based architecting of the software system for autonomous robotized open pit mining Sergey V. Zykov, Igor O. Temkin, and Sergey A. Deryabin	1
SNQ P Systems with Weights on Synapses Florin-Daniel Bîlbîe	1
Some Remarks on the Translocation Distance Maria Constantin, and Alexandru Popa	1
Bi-level Optimization Model of O2O Fresh Product Experience Store Location Considering Service Quality Wang Xuping, He Honghui, Zhang Zhiying, and Zhao Mingming	1
IT Crisisology: The New Discipline for Managing Software Development in Crisis	1
Sergey V. Zykov	1

Contents xiii

A Blockchain Based Proposal for Protecting Healthcare Systems through Formal Methods Luca Brunese, Francesco Mercaldo, Alfonso Reginelli, and Antonella Santone	1787
Radiomic Features for Medical Images Tamper Detection by Equivalence Checking Luca Brunese, Francesco Mercaldo, Alfonso Reginelli, and Antonella Santone	1795
Formal Modeling for Magnetic Resonance Images Tamper Mitigation Luca Brunese, Francesco Mercaldo, Alfonso Reginelli, and Antonella Santone	1803
On Approaches to Discretisation of Stylometric Data and Conflict Resolution in Decision Making Urszula Stańczyk, and Beata Zielosko	1811
Evaluation of Data Similarity using Data Jackets based on Users' Recognition Nao Uehara, Teruaki Hayashi, and Yukio Ohsawa	1821
Creditworthiness-based Service Differentiation Strategy for Health Data Bank Jianxia Gong, and Lindu Zhao	1833
Feedback Equilibrium for Dynamic Competitive and Cooperative Advertising Shigui Ma, Yong He, Ran Gu, and Sijie Li	1843
Formal Verification approaches of Self-adaptive Systems: A Survey Marwa Hachicha, Riadh Ben Halima, and Ahmed Hadj Kacem	1853
Malware Image Classification Using One-Shot Learning with Siamese Networks Shou-Ching Hsiao, Da-Yu Kao, Zi-Yuan Liu, and Raylin Tso	1863
Allocation rules for joint replenishment and inventory sharing via transshipment Xuefei Shi, Haiyan Wang, and Weili Xue	1872
Intelligent Hospital Appointment System Based on Health Data Bank Yixin Liang, and Lindu Zhao	1880
Drone Forensic Investigation: DJI Spark Drone as A Case Study Da-Yu Kao, Min-Ching Chen, Wen-Ying Wu, Jsen-Shung Lin, Chien-Hung Chen, and Fuching Tsai	1890
Using Google Maps to Track Down Suspects in a Criminal Investigation Chih-hung Shih, Fang-Cheng Chen, Shun-Wei Cheng, and Da-Yu Kao	1900
Exploring drug-related crimes with social network analysis Fu-Ching Tsai, Ming-Chun Hsu, Chien-Ta Chen, and Da-Yu Kao	1907
Simulation of one dimensional staged DNA tile assembly by the signal-passing hierarchical TAM Gefry Barad, Alexandru Amarioarei, Mihaela Paun, Ana Maria Dobre, Corina Itcus, Iris Tusa, Romica Trandafir, and Eugen Czeizler	1918
Differences of risk knowledge described in work procedures manual and that used in real field by field overseers Noriyuki Kushiro, Koshiro Nishinaga, Yusuke Aoyama, and Toshihiro Mega	1928
ECG sensor for detection of driver's drowsiness Markus Gromer, David Salb, Thomas Walzer, Natividad Martínez Madrid, and Ralf Seepold	1938
PPCU Sam: Open-source face recognition framework Botos Csaba, Hakkel Tamás, András Horváth, András Oláh, and István Z. Reguly	1947
Knowledge-Aware Learning Analytics for Smart Learning Weiqin Chen	1957
A Proposal of Matching Algorithm for New Type of Advertisement Business Model Motoi Iwashita	1966

xiv Contents

Proposition of the methodology for Data Acquisition, Analysis and Visualization in support of Industry 4.0	
Syed Imran Shafiq, Edward Szczerbicki, and Cesar Sanin	1976
Facial Expression Visualization System for Medical Interview Practice Support Daisuke Yatera, Katsumi Nishiya, Yusuke Karouji, and Tomoko Kojiri	1986
Metacognitive Inference Activity Support by Visualizing Eye-Movement Graph During Critical Reading Tatsuya Hashimoto, Yuki Hayashi, and Kazuhisa Seta	1995
Research on Comparison between Model Human Processor and Readiness Potential Nanako Shimizu, Toshitaka Higashino, and Masato Soga	2005
Development of an Interactive Training Support System for Drawing and Painting Skill on a 3D Object with AR and Haptic Interface Haruki Shima, and Masato Soga	2015
Proposal and Development of the System for Private Navigation Yudai Asano, Toshitaka Higashino, and Masato Soga	2024
Willingness of sharing personal device data for scientific research Grzegorz Szyjewski	2032
Paper Introduction Presentation Support Environment for Reading Skill and Presentation Skill Development Keisuke Fukuhara, and Tomoko Kojiri	2041
Influence of various normalization methods in PROMETHEE II: an empirical study on the selection of the airport location Krzysztof Palczewski, and Wojciech Sałabun	2051
Semantic Search Engine for Daily Work Reports Integrating Heterogeneous Ontologies Kohei Suehiro, Kazuki Masumura, Takeshi Morita, and Takahira Yamaguchi	2061
Ontologies-Based Pupil Robot Interaction with Group Discussion Hiroki Ono, Kaito Koike, Takeshi Morita, and Takahira Yamaguchi	2071
Sustainable production network design for city multi-floor manufacturing cluster Tomasz Dudek, Tygran Dzhuguryan, and Justyna Lemke	2081
Expanding an open source e-commerce with a separate ICT system Grzegorz Szyjewski	2091
Internal Self-Conversation Support System by Iteration on Reflective Thinking and Research Documentation Tomoki Matsuoka, Kazuhisa Seta, and Yuki Hayashi	2102
Product Design Support System Based on Embodiment of Vague Concept Using Thesaurus Mitsuho Nakajima, and Tomoko Kojiri	2110
Intelligent Decision Management for Architecting Service-Dominant Digital Products Alfred Zimmermann, Rainer Schmidt, Kurt Sandkuhl, and Dierk Jugel.	2120
When Industry 4.0 meets Process Mining Cristina-Claudia Osman, and Ana-Maria Ghiran	2130
The impact of self-control on search behavior Hongen Gu, and Katsutoshi Yada	2137
Model Consistency as a Tool for Digital Business Architecture Verification Václav Řepa, and Oleg Svatoš	2144

Contents xv

A new template concept guided honey bee optimization for Max-CSPs Hajer Ben Othman, and Sadok Bouamama
Analysis of social influence on in-store purchase behavior by using ecological system of ants Ken Ishibashi, and Katsutoshi Yada
Tree-based generational feature selection in medical applications Paja Wiesław
Clustering and visualization of a high-dimensional diabetes dataset Piotr Lasek, and Zhen Mei
The method of multidimensional approach to text summarization Piotr Janaszkiewicz, and Przemysław Różewski
Application of artificial intelligence in the process of supporting the ship owner's decision in the management of ship machinery crew in the aspect of shipping safety Zbigniew Łosiewicz, Piotr Nikończuk, and Dariusz Pielka
The framework for creating a psychological assessment tool based on interactive storytelling Marcin Prys, Przemysław Różewski, and Matthias Ziegler
Environmental taxes - how public policy makers can use them in the decision-making process? Magdalena Ziolo, Iwona Bak, and Katarzyna Cheba
Analysis of Frontal Cerebral Blood Flow Changes in Hand Grip Force Adjustment Skill Learning Hirokazu Miura, Masahiro Hakoda, Noriyuki Matsuda, and Hirokazu Taki
Smart Virtual Product Development (SVPD) to Enhance Product Manufacturing in Industry 4.0 Muhammad Bilal Ahmed, Cesar Sanin, and Edward Szczerbicki
Multi-criteria Evaluation of Recommending Interfaces towards Habituation Reduction and Limited Negative Impact on User Experience Kamil Bortko, Piotr Bartków, Jarosław Jankowski, Damian Kuras, and Piotr Sulikowski
Visual content representation and retrieval for Cognitive Cyber Physical Systems Caterine Silva de Oliveira, Cesar Sanin, and Edward Szczerbicki
Development of Android Version Active Textbook System Shin-nosuke Suzuki, Yutaro Akimoto, Katsumi Hirata, Manabu Ishihara, Ryohei Kameyama, Masaya Yamaguchi, and Kuniaki Yajima
Selected methodological and practical aspects of the multi-criteria method PVM Nermend Kesra, Piwowarski Mateusz, and Wojciech Sałabun
Parametrization of Spreading Processes Within Complex Networks with the Use of Knowledge Acquired from Network Samples Artur Karczmarczyk, Jaroslaw Jankowski, and Jaroslaw Watrobski
The fuzzy TOPSIS applications in the last decade Krzysztof Palczewski, and Wojciech Sałabun
Concept of expert system for creation of personalized, digital skills learning pathway Przemysław Różewski, Magdalena Kieruzel, Tomasz Lipczyński, Marcin Prys, Miguel-Angel Sicilia, Elena García-Barriocanal, Salvador Sánchez-Alonso, Canice Hamill, Carme Royo, and Francesca Uras
Automatic Hazard Identification Information System (AHIIS) for decision support in inland waterway navigation Ireneusz Miciuła, and Henryk Wojtaszek
Using the AHP method to select an energy supplier for household in Poland
Ireneusz Miciuła, and Joanna Nowakowska-Grunt

xvi Contents

Akinori Abe, and Kotone Tadaki	2335
Observations on Residents' Risk Awareness and Practice of Countermeasures against Natural Disasters in Mongolia: Questionnaire Survey Data of Khovd Citizens Yumiko Nara, and Sukhee Battulga	2345
Development of a support system for reviewing and learning historical events by active simulation using AR markers Hiroki Takenaka, and Masato Soga	2355
Clustering and pattern recognition in bioengineering and autonomous systems Milan Todorovic, and Milan Simic	2364
A competitive model of standardization and customization with behavior-based pricing Qingyi Fei, and Lindu Zhao	2374
Bio-Inspired Routing Protocol in VANET Networks- A Case Study Tarik El Ouahmani, Abdellah Chehri, and Nadir Hakem	2384
The influence of power distance on requirements engineering activities Tawfeeq Alsanoosy, Maria Spichkova, and James Harland	2394
Application of VMCM method (Vector Measure Construction Methods) to estimate consumer's quality of life in EU countries – dynamic perspective Mateusz Piwowarski, Dominika Maison, and Jarosław Wątróbski	2404
Voice-activated solutions for agile retrospective sessions Purwa Kishor Gaikwad, Chris Theodore Jayakumar, Eashan Tilve, Niraj Bohra, Wenfei Yu, and Maria Spichkova	2414
IADL Evaluation for Preventing Dementia Yuki Hayashi, and Akinori Abe	2424
An EAF guard driver to prevent shellcode from removing guard pages Shu Akabane, Tomoya Miwa, and Takeshi Okamoto	2432
A Model Predictive Control Approach for Cholera Outbreaks with Mobile Sensing Mu Du, Aditya Sai, Lindu Zhao, and Nan Kong	2440
Entrepreneurial self-efficacy and intention among vietnamese students: a meta-analytic path analysis based on the theory of planned behavior	2447
Duong Cong Doanh, and Tomasz Bernat. Knowledge and educational capital in the process of modern society creation Anna Barwińska Małajowicz, Patrycja Żegleń, and Tomasz Bernat	2447 2461
Relations of GDP growth and development of SMEs in Poland Maciej Woźniak, Joanna Duda, Aleksandra Gąsior, and Tomasz Bernat	2470
Endo- and exogenous conditions of entrepreneurial process of university spin-off companies in Poland Jaroslaw Korpysa	2481
Identification of the football teams assessment model using the COMET method Krzysztof Palczewski, and Wojciech Sałabun	2491
Defining Requirements for a Gamified Programming Exercises Format Jakub Swacha, Ricardo Queirós, José Carlos Paiva, and José Paulo Leal	2502
Mini-models based on soft clustering methods Marcin Pietrzykowski	2512

Contents xvii

Optimization of control system for modified configuration of a refrigeration unit Tomasz Łokietek, Sławomir Jaszczak, and Piotr Nikończuk	2522
An online intelligent vehicle routing and scheduling approach for B2C e-commerce urban logistics distribution Haiyang Shi, Lijun Sun, Yue Teng, and Xiangpei Hu	2533
Computer modeling and testing of structural metamaterials T. Krolikowski, R. Knitter, and A. Blazejewski	2543
Thermo-mechanic tests using 3d printed elements T. Krolikowski, R. Knitter, and M. Stachnik	2551
Finite State Machine Based Modelling of Discrete Control Algorithm in LAD Diagram Language With Use of New Generation Engineering Software Wojciech Zając, Grzegorz Andrzejewski, Kazimierz Krzywicki, and Tomasz Królikowski	2560
Automated gathering and analysis of cannabinoids treatment data Rachita Chugh, Nidhi Chawla, Rochelle Maria Gracias, Jitender Singh Padda, Songyan Li, Minh Tuan Nguyen, Maria Spichkova, and Nitin Mantri	2570
Development and Improvement of Human Resource Development in Nuclear Engineering for National College Students in Japan Eiji Takada, Seiki Saito, Fumito Sakamoto, Shigekazu Suzuki, Yoshihide Shibata, Tomoaki Yoneda, Atsushi Minoda, Hideki Tenzo, Noriyuki Iwata, Itaru Nakamura, Kuniaki Yajima, and Katsuko T. Nakahira.	2580
A Big-Data-Analytics Framework for Supporting Logistics Problems in Smart-City Environments Alfredo Cuzzocrea, Massimiliano Nolich, and Walter Ukovich	2589
Classification of left and right knee extension motor imagery using common spatial pattern for BCI applications Madiha Tariq, Pavel M. Trivailo, and Milan Simic	2598
Novel, shape optimised, TEG subsystem design Andrew Royale, Milan Simic, Petros Lappas, Philipp Schiffer, and Ramchandran Palaniswamy	2607
Comparative study of ICT and SIS measurement in Polish households using a MCDA-based approach Artru Karczmarczyk, Jarosław Wątróbski, Jarosław Jankowski, and Ewa Ziemba	2616
Identification and features selection of elderly people based on accelerations of smartphone Yuji Watanabe, and Nao Yasuda	2629