

Contents

SOCO 2017: Genetic and Evolutionary Algorithms

Learning Bayesian Network to Predict Group Emotion in Kindergarten by Evolutionary Computation	3
Seul-Gi Choi and Sung-Bae Cho	

Dynamic Resources Configuration for Coevolutionary Scheduling of Scientific Workflows in Cloud Environment	13
Alexander A. Visheratin, Mikhail Melnik, and Denis Nasonov	

Computation of Berge-Zhukovskii Equilibrium in Discrete Time Dynamic Games	24
Noémi Gaskó, Mihai Alexandru Suciú, and Rodica Ioana Lung	

Applying Genetic Algorithms in Chemical Engineering for Determining Zeolite Structures	34
Xuehua Liu, Estefania Argente, Soledad Valero, and German Sastre	

SOCO 2017: Fuzzy Logic

Health Assessment of Automotive Batteries Through Computational Intelligence-Based Soft Sensors: An Empirical Study	47
Eva Almansa, David Anseán, Inés Couso, and Luciano Sánchez	

Intelligent Decision System Based on Fuzzy Logic Expert System to Improve Plastic Injection Molding Process	57
M.L. Chaves, J.J. Márquez, H. Pérez, L. Sánchez, and A. Vizán	

Acquisition and Fuzzy Processing of Physiological Signals to Obtain Human Stress Level Using Low Cost Portable Hardware	68
Unai Zalabarría, Eloy Irigoyen, Raquel Martínez, and Javier Arechalde	

A Fuzzy Ordered Weighted Averaging Approach to Rerostring in Nurse Scheduling Problem 79
 Svetlana Simić, Dragan Simić, Dragana Milutinović, Jovanka Đorđević, and Svetislav D. Simić

SOCO 2017: Energy Efficiency

Optimization of Wind Power Producer Participation in Electricity Markets with Energy Storage in a Way of Energy 4.0 91
 Isaias L.R. Gomes, Hugo M.I. Pousinho, Rui Melício, and Victor M.F. Mendes

Gas Consumption Prediction Based on Artificial Neural Networks for Residential Sectors 102
 Alain Porto and Eloy Irigoyen

Bioclimatic House Heat Exchanger Behavior Prediction with Time Series Modeling 112
 Bruno Baruque, Esteban Jove, José Luis Casteleiro-Roca, Santiago Porras, José Luis Calvo-Rolle, and Emilio Corchado

Optimization with the Evolution Strategy by Example of Electrical-Discharge Drilling 125
 Jan Streckenbach, Ivan Santibáñez Koref, Ingo Rechenberg, and Eckart Uhlmann

SOCO 2017: Soft Computing Applications

Detection of Cardiac Arrhythmias Through Singular Spectrum Analysis of a Time-Distorted EGM Signal 137
 Jesús Fernández, Julián Velasco, and Luciano Sánchez

An Approach to Location Extraction from Russian Online Social Networks: Road Accidents Use Case 147
 Timur Fatkulín, Nikolay Butakov, Bakhruz Dzhafarov, Maxim Petrov, and Daniil Voloshin

Intelligent Maintenance for Industrial Processes, a Case Study on Cold Stamping 157
 Fernando Boto, Zigor Lizuain, and Alberto Jimenez Cortadi

Attempts Prediction by Missing Data Imputation in Engineering Degree 167
 Esteban Jove, Patricia Blanco-Rodríguez, José Luis Casteleiro-Roca, Javier Moreno-Arboleda, José Antonio López-Vázquez, Francisco Javier de Cos Juez, and José Luis Calvo-Rolle

SOCO 2017: Data Mining and Optimization

Forecasting Freight Inspection Volume Using Bayesian Regularization Artificial Neural Networks: An Aggregation-Disaggregation Procedure 179
 Juan Jesús Ruiz-Aguilar, José Antonio Moscoso-López, Ignacio Turias, and Javier González-Enrique

Combining Stream Mining and Neural Networks for Short Term Delay Prediction 188
 Maciej Grzenda, Karolina Kwasiborska, and Tomasz Zaremba

Techniques and Utilities to Improve the Design, Development and Debugging of Multiagent Applications with Agile Principles 198
 Francisco J. Aguayo, Isaías García, Héctor Alaiz-Moretón, and Carmen Benavides

About Nash Equilibrium, Modularity Optimization, and Network Community Structure Detection. 209
 Rodica Ioana Lung, Mihai Alexandru Suciú, and Noémi Gaskó

Design and Implementation of a Vision System on an Innovative Single Point Micro-machining Device for Tool Tip Localization 219
 Luis López-Estrada, Marcelo Fajardo-Pruna, Lidia Sánchez-González, Hilde Pérez, and Antonio Vizán

New Application of 3D VFH Descriptors in Archaeological Categorization: A Case Study 229
 José Santamaría, Enrique Bermejo, Carlos Enríquez, Sergio Damas, and Óscar Cerdón

Spanish Patent Landscape 2013–2016 237
 Andrea Vázquez-Ingelmo, Ana-Belén Gil-González, Angel-Luis Blanco-Mateos, Fernando De la Prieta, and Ana de Luis-Reboredo

Instability Detection on a Radial Turning Process for Superalloys 247
 Alberto Jimenez Cortadí, Fernando Boto, Itziar Irigoien, Basilio Sierra, and Alfredo Suarez

SOCO 2017: MACHINE LEARNING

PAELLA as a Booster in Weighted Regression 259
 Manuel Castejón-Limas, Hector Alaiz-Moreton, Laura Fernández-Robles, Javier Alfonso-Cendón, Camino Fernández-Llamas, Lidia Sánchez-González, and Hilde Pérez

A Data-Driven Approach to Dialog Structure Modeling 266
 David Griol, Araceli Sanchis, and José Manuel Molina

Inception and Specification of What-If Scenarios Using OLAP Usage Preferences	276
Mariana Carvalho and Orlando Belo	
Analysing the Effect of Recent Anti-pollution Policies in Madrid City Through Soft-Computing	286
Ángel Arroyo, Verónica Tricio, Álvaro Herrero, and Emilio Corchado	
SOCO 2017: Soft Computing Methods in Manufacturing and Management Systems	
An Activity-Oriented Petri Net Simulation Approach for Optimization of Dispatching Rules for Job Shop Transient Scheduling	299
Damian Krenczyk, Reggie Davidrajuh, and Bozena Skolud	
MAC Approach Concept for Virtual Manufacturing Networks Generating	310
Aleksander Gwiazda, Magłorzata Olender, Agnieszka Sękala, and Damian Kręczyk	
Ecodesign of Technological Processes with the Use of Decision Trees Method	318
Izabela Rojek, Ewa Dostatni, and Adam Hamrol	
Modular Petri Net Models of Communicating Agents	328
Reggie Davidrajuh	
Methodology Supporting the Planning of Machining Allowances in the Wood Industry	338
Agnieszka Kujawińska, Magdalena Diering, Krzysztof Żywicki, Michał Rogalewicz, Adam Hamrol, Piotr Hoffmann, and Marek Konstańczak	
Stochastic Scheduling of Production Orders Under Uncertainty	348
Iwona Lapunka, Iwona Pisz, and Piotr Wittbrodt	
SOCO 2017: Artificial Intelligence and Machine Learning Applied to Health Sciences	
Outcome Prediction for Salivary Gland Cancer Using Multivariate Adaptative Regression Splines (MARS) and Self-Organizing Maps (SOM)	361
Paloma Lequerica-Fernández, Ignacio Peña, Fernando Sánchez Lasheras, Francisco Javier Iglesias Rodriguez, Carlos González Gutiérrez, and Juan Carlos De Vicente	

An Artificial Neural Network Model for the Prediction of Bruxism by Means of Occlusal Variables 371
 Ángel Álvarez-Arenal, Héctor deLlanos-Lanchares,
 Elena Martín-Fernandez, Carlos González-Gutiérrez,
 Mario Mauvezin-Quevedo, and Francisco Javier de Cos Juez

Genetic Algorithm Based on Support Vector Machines for Computer Vision Syndrome Classification 381
 Eva María Artime Ríos, María del Mar Seguí Crespo, Ana Suarez Sánchez,
 Sergio Luis Suárez Gómez, and Fernando Sánchez Lasheras

A Methodology for the Detection of Relevant Single Nucleotide Polymorphism in Prostate Cancer by Means of Multivariate Adaptive Regression Splines and Backpropagation Artificial Neural Networks 391
 Juan Enrique Sánchez Lasheras, Adonina Tardón,
 Guillermo González Tardón, Sergio Luis Suárez Gómez,
 Vicente Martín Sánchez, Carmen González Donquiles,
 and Francisco Javier de Cos Juez

A Multiregressive Approach for SNPs Identification in Prostate Cancer 400
 David Álvarez Gutiérrez, Fernando Sánchez Lasheras,
 Sergio Luis Suárez Gómez, Jesús Daniel Santos, Adonina Tardón,
 Guillermo González Tardón, Carmen González Donquiles,
 and Vicente Martín Sánchez

Comparison of the Periimplant Bone Stress Distribution on Three Fixed Partial Supported Prosthesis Designs Under Different Loading. A 3D Finite Element Analysis 410
 Héctor deLlanos-Lanchares, Ángel Alvarez-Arenal,
 Javier Bobes Bascaran, Carlos González-Gutiérrez,
 Ana Suarez Sanchez, and Francisco Blanco Álvarez

PoDA Algorithm: Predictive Pathways in Colorectal Cancer 419
 Carmen Gonzalez-Donquiles, Fernando Sanchez-Lasheras,
 Jessica Alonso-Molero, Laura Vilorio-Marqués, Tania Fernandez-Villa,
 Guillermo González Tardón, Antonio José Molina, and Vicente Martin

Sparse Representation Based Anomalies Detection in Electrocardiography Signals 428
 Tomasz Andrysiak

A SMOTE Extension for Balancing Multivariate Epilepsy-Related Time Series Datasets 439
 Enrique de la Cal, José R. Villar, Paula Vergara, Javier Sedano,
 and Álvaro Herrero

Mining Temporal Causal Relations in Medical Texts 449
 Alejandro Sobrino, Cristina Puente, and José Ángel Olivas

A Machine Learning Based System for Analgesic Drug Delivery 461
 Jose M. Gonzalez-Cava, Rafael Arnay, Juan Albino Méndez Pérez,
 Ana León, María Martín, Esteban Jove-Perez, José Luis Calvo-Rolle,
 Jose Luis Casteleiro-Roca, and Francisco Javier de Cos Juez

**Assessing Feature Selection Techniques for a Colorectal Cancer
 Prediction Model** 471
 Nahúm Cueto-López, Rocío Alaiz-Rodríguez, María Teresa García-Ordás,
 Carmen González-Donquiles, and Vicente Martín

**Data Mining Techniques for the Estimation of Variables
 in Health-Related Noisy Data** 482
 Hector Alaiz-Moreton, Laura Fernández-Robles, Javier Alfonso-Cendón,
 Manuel Castejón-Limas, Lidia Sánchez-González, and Hilde Pérez

**An Intelligent Model to Predict ANI in Patients Undergoing
 General Anesthesia** 492
 Esteban Jove, Jose M. Gonzalez-Cava, José Luis Casteleiro-Roca,
 Juan Albino Méndez Pérez, José Luis Calvo-Rolle,
 and Francisco Javier de Cos Juez

CISIS 2017: Mathematical Algorithms and Models

Coupling the PAELLA Algorithm to Predictive Models 505
 Manuel Castejón-Limas, Hector Alaiz-Moreton, Laura Fernández-Robles,
 Javier Alfonso-Cendón, Camino Fernández-Llamas,
 Lidia Sánchez-González, and Hilde Pérez

Query Based Object Retrieval Using Neural Codes 513
 Surajit Saikia, Eduardo Fidalgo, Enrique Alegre,
 and Laura Fernández-Robles

**Parallel Performance of the Boundary Element Method
 in Thermoelastic Contact Problems** 524
 Raquel González, Lidia Sánchez-González, José Vallepuga,
 and Iván Ubero

**A New Simple Attack on a Wide Class of Cryptographic
 Sequence Generators** 533
 Sara D. Cardell, Amparo Fuster-Sabater, and Li Bin

CISIS 2017: Infrastructure and Network Security

**Adaptive Database Intrusion Detection Using Evolutionary
 Reinforcement Learning** 547
 Seul-Gi Choi and Sung-Bae Cho

Learning Classifier Systems for Adaptive Learning of Intrusion Detection System 557
 Chang Seok Lee and Sung Bae Cho

Time Series Forecasting Using Holt-Winters Model Applied to Anomaly Detection in Network Traffic 567
 Tomasz Andrysiak, Łukasz Saganowski, and Mirosław Maszewski

Software Defined Networking Opportunities for Intelligent Security Enhancement of Industrial Control Systems 577
 Markel Sainz, Mikel Iturbe, Iñaki Garitano, and Urko Zurutuza

CISIS 2017: Applications of Intelligent Methods for Security

Empirical Study to Fingerprint Public Malware Analysis Services 589
 Álvaro Botas, Ricardo J. Rodríguez, Vicente Matellán, and Juan F. García

Illegal Activity Categorisation in DarkNet Based on Image Classification Using CREIC Method 600
 Eduardo Fidalgo, Enrique Alegre, Victor González-Castro, and Laura Fernández-Robles

AES-CTR as a Password-Hashing Function 610
 Rafael Álvarez-Sánchez, Alicia Andrade-Bazurto, Ivan Santos-González, and Antonio Zamora-Gómez

FAST: A High-Performance Architecture for Heterogeneous Big Data Forensics 618
 Ciprian Pungila and Viorel Negru

CISIS 2017: Identification, Simulation and Prevention of Security and Privacy Threats in Modern Communication Networks

New Approaches of Epidemic Models to Simulate Malware Propagation 631
 Jose Diamantino Hernández Guillén, Ángel Martín del Rey, and Luis Hernández Encinas

A SEIR Model for Computer Virus Spreading Based on Cellular Automata 641
 Farrah Kristel Batista, Ángel Martín del Rey, Santiago Quintero-Bonilla, and Araceli Queiruga-Dios

A Proposal for Using a Cryptographic National Identity Card in Social Networks 651
 Víctor Gayoso Martínez, Luis Hernández Encinas, Agustín Martín Muñoz, and Raúl Durán Díaz

A Parameter-Free Method for the Detection of Web Attacks 661
 Gonzalo de la Torre-Abaitua, Luis F. Lago-Fernández, and David Arroyo

A Review of Cryptographically Secure PRNGs in Constrained Devices for the IoT 672
 Amalia Beatriz Orúe, Luis Hernández Encinas, Veronica Fernández, and Fausto Montoya

Encrypted Cloud: A Software Solution for the Secure Use of Free-Access Cloud Storage Services 683
 Alejandro Sanchez-Gomez, Jesus Diaz, and David Arroyo

ICEUTE 2017

A Proposal to Integrate Conversational Interfaces in Mobile Learning Applications 695
 David Griol, Araceli Sanchis, and José Manuel Molina

Developing Cooperative Evaluation Methodologies in Higher Education 706
 Enrique Domínguez and Ezequiel López-Rubio

Assessment of the Recent Postgraduates in Cybersecurity on Barriers and Required Skills for Their Early Career 712
 Raquel Poy and Miguel Carriegos

Analysis of Professional Ethics in Engineering Undergraduate Degrees 720
 Marián Queiruga Dios, Juan José Bullón Pérez, Araceli Queiruga-Dios, Ascensión Hernández Encinas, and Angélica González Arrieta

PID-ITS: An Intelligent Tutoring System for PID Tuning Learning Process 726
 Esteban Jove, Héctor Alaiz-Moretón, Isaías García-Rodríguez, Carmen Benavides-Cuellar, José Luis Casteleiro-Roca, and José Luis Calvo-Rolle

Teaching Project Management to Multicultural Students: A Case Study at Universities of León and Xiangtan 736
 Laura Fernández-Robles, Manuel Castejón-Limas, Javier Alfonso-Cendón, and Gabriel Medina

Analysis of the Online Interactions of Students in the Project Management Learning Process 743
 Rubén Olarte-Valentín, Rodolfo Múgica-Vidal, Elisa Sainz-García, Fernando Alba-Elías, and Laura Fernández-Robles

A Virtual Learning Environment to Support Project Management Teaching 751
Ana González-Marcos, Rubén Olarte-Valentín, Elisa Sainz-García, Rodolfo Múgica-Vidal, and Manuel Castejón-Limas

Author Index. 761



<http://www.springer.com/978-3-319-67179-6>

International Joint Conference

SOCO'17-CISIS'17-ICEUTE'17 León, Spain, September

6-8, 2017, Proceeding

Perez, H.; Alfonso-Cendón, J.; Sánchez, L.; Quintián, H.;

Corchado, E. (Eds.)

2018, XXIX, 763 p. 285 illus., Softcover

ISBN: 978-3-319-67179-6