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Computational Collective Intelligence

8th International Conference, ICCCI 2016
Halkidiki, Greece, September 28–30, 2016
Proceedings, Part I

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Preface

This volume contains the proceedings of the 9th International Conference on Computational Collective Intelligence (ICCCI 2016), held in Halkidiki, Greece, September 28–30, 2016. The conference was co-organized by the Aristotle University of Thessaloniki, Greece, the Democritus University of Thrace, Greece, and the Wrocław University of Science and Technology, Poland. The conference was run under the patronage of the IEEE SMC Technical Committee on Computational Collective Intelligence.

Following the successes of the First ICCCI (2009) held in Wrocław, Poland, the Second ICCCI (2010) in Kaohsiung, Taiwan, the Third ICCCI (2011) in Gdynia, Poland, the 4th ICCCI (2012) in Ho Chi Minh City, Vietnam, the 5th ICCCI (2013) in Craiova, Romania, the 6th ICCCI (2014) in Seoul, South Korea, and the 7th ICCCI (2015) in Madrid, Spain, this conference continues to provide an internationally respected forum for scientific research in the computer-based methods of collective intelligence and their applications.

Computational collective intelligence (CCI) is most often understood as a sub-field of artificial intelligence (AI) dealing with soft computing methods that enable making group decisions or processing knowledge among autonomous units acting in distributed environments. Methodological, theoretical, and practical aspects of CCI are considered as the form of intelligence that emerges from the collaboration and competition of many individuals (artificial and/or natural). The application of multiple computational intelligence technologies such as fuzzy systems, evolutionary computation, neural systems, consensus theory, etc., can support human and other collective intelligence, and create new forms of CCI in natural and/or artificial systems. Three subfields of the application of computational intelligence technologies to support various forms of collective intelligence are of special interest but are not exclusive: Semantic Web (as an advanced tool for increasing collective intelligence), social network analysis (as the field targeted to the emergence of new forms of CCI), and multi-agent systems (as a computational and modeling paradigm especially tailored to capture the nature of CCI emergence in populations of autonomous individuals).

The ICCCI 2016 conference featured a number of keynote talks and oral presentations, closely aligned to the theme of the conference. The conference attracted a substantial number of researchers and practitioners from all over the world, who submitted their papers for the main track and 12 special sessions.

The main track, covering the methodology and applications of CCI, included: multi-agent systems, knowledge engineering and Semantic Web, natural language and text processing, data-mining methods and applications, decision support and control systems, and innovations in intelligent systems. The special sessions, covering some specific topics of particular interest, included cooperative strategies for decision making and optimization, meta-heuristics techniques and applications, Web systems and human-computer interaction, applications of software agents, social media and the Web of linked data, computational swarm intelligence, ambient networks, information

technology in biomedicine, impact of smart and intelligent technology on education, big data mining and searching, machine learning in medicine and biometrics, and low-resource language processing.

We received 277 submissions. Each paper was reviewed by two to four members of the international Program Committee of either the main track or one of the special sessions. We selected the 108 best papers for oral presentation and publication in two volumes of the *Lecture Notes in Artificial Intelligence* series.

We would like to express our thanks to the keynote speakers, Plamen Angelov, Heinz Koepl, Manuel Núñez, and Leszek Rutkowski, for their world-class plenary speeches. Many people contributed toward the success of the conference. First, we would like to recognize the work of the PC co-chairs and special sessions organizers for taking good care of the organization of the reviewing process, an essential stage in ensuring the high quality of the accepted papers. The workshops and special sessions chairs deserve a special mention for the evaluation of the proposals and the organization and coordination of the work of the 12 special sessions. In addition, we would like to thank the PC members, of the main track and of the special sessions, for performing their reviewing work with diligence. We thank the Organizing Committee chairs, liaison chairs, publicity chair, special issues chair, financial chair, Web chair, and technical support chair for their fantastic work before and during the conference. Finally, we cordially thank all the authors, presenters, and delegates for their valuable contribution to this successful event. The conference would not have been possible without their support.

It is our pleasure to announce that the conferences of the ICCCI series continue their close cooperation with the Springer journal *Transactions on Computational Collective Intelligence*, and the IEEE SMC Technical Committee on Transactions on Computational Collective Intelligence.

Finally, we hope that ICCCI 2016 significantly contributes to the academic excellence of the field and leads to the even greater success of ICCCI events in the future.

September 2016

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Contents – Part I

Multi-agent Systems

A Novel Interaction Protocol of a Multiagent System for the Study of Alternative Decisions	3
<i>Florin Leon</i>	
Modeling Internalizing and Externalizing Behaviour in Autism Spectrum Disorders	13
<i>Laura M. van der Lubbe, Jan Treur, and Willeke van Vught</i>	
Analysis and Refinement of a Temporal-Causal Network Model for Absorption of Emotions	27
<i>Eric Fernandes de Mello Araújo and Jan Treur</i>	
Cognitive Modelling of Emotion Contagion in a Crowd of Soccer Supporter Agents	40
<i>Berend Jutte and C. Natalie van der Wal</i>	
The Role of Mood on Emotional Agents Behaviour	53
<i>Petros Kefalas, Ilias Sakellariou, Suzie Savvidou, Ioanna Stamatopoulou, and Marina Ntika</i>	
Modelling a Mutual Support Network for Coping with Stress	64
<i>Lenin Medeiros, Ruben Sikkes, and Jan Treur</i>	

Knowledge Engineering and Semantic Web

Knowledge Integration Method for Supply Chain Management Module in a Cognitive Integrated Management Information System	81
<i>Marcin Hernes</i>	
An Asymmetric Approach to Discover the Complex Matching Between Ontologies	90
<i>Fatma Kaabi and Faiez Gargouri</i>	
An Evidential Approach for Managing Temporal Relations Uncertainty	98
<i>Nessrine El Hadj Salem, Allel Hadjali, Aymen Gammoudi, and Boutheina Ben Yaghlane</i>	
An Improvement of the Two-Stage Consensus-Based Approach for Determining the Knowledge of a Collective	108
<i>Van Du Nguyen, Ngoc Thanh Nguyen, and Dosam Hwang</i>	

Natural Language and Text Processing

An Approach to Subjectivity Detection on Twitter
 Using the Structured Information 121
Juan Sixto, Aitor Almeida, and Diego López-de-Ipiña

WSD-TIC: Word Sense Disambiguation Using Taxonomic Information
 Content 131
Mohamed Ben Aouicha, Mohamed Ali Hadj Taieb, and Hania Ibn Marai

What Makes Your Writing Style Unique? Significant Differences
 Between Two Famous Romanian Orators. 143
Mihai Dascalu, Daniela Gifu, and Stefan Trausan-Matu

A Novel Approach to Identify Factor Posing Pronunciation Disorders 153
Naim Terbeh and Mounir Zrigui

Towards an Automatic Intention Recognition from Client Request 163
Noura Labidi, Tarak Chaari, and Rafik Bouaziz

Data Mining Methods and Applications

Fuzzy Cognitive Maps for Long-Term Prognosis of the Evolution
 of Atmospheric Pollution, Based on Climate Change Scenarios:
 The Case of Athens. 175
*Vardis-Dimitris Anezakis, Konstantinos Dermetzis, Lazaros Iliadis,
 and Stefanos Spartalis*

The Results of a Complex Analysis of the Modified Pratt-
 Yaskorskiy Performance Metrics Based on the Two-Dimensional
 Markov-Renewal-Process 187
Viktor Geringer, Dmitry Dubinin, and Alexander Kochegurov

Generic Ensemble-Based Representation of Global Cardiovascular
 Dynamics for Personalized Treatment Discovery and Optimization 197
*Olga Senyukova, Valeriy Gavrishchaka, Maria Sasonko, Yuri Gurfinkel,
 Svetlana Gorokhova, and Nikolay Antsygin*

Avoiding the Curse of Dimensionality in Local Binary Patterns 208
Karel Petranek, Jan Vanek, and Eva Milkova

On the Foundations of *Multinomial* Sequence Based Estimation 218
B. John Oommen and Sang-Woon Kim

Global Solar Radiation Prediction Using Backward Propagation Artificial
 Neural Network for the City of Addis Ababa, Ethiopia 230
Younas Worki, Eshetie Berhan, and Ondrej Krejcar

Determining the Criteria for Setting Input Parameters of the Fuzzy Inference Model of P&R Car Parks Locating 239
Michał Lower and Anna Lower

On Systematic Approach to Discovering Periodic Patterns in Event Logs. 249
Marcin Zimniak and Janusz R. Getta

The Fuzzy Approach to Assessment of ANOVA Results 260
Jacek Pietraszek, Maciej Kołomycki, Agnieszka Szczotok, and Renata Dwornicka

Virtual Road Condition Prediction Through License Plates in 3D Simulation 269
Orcan Alpar and Ondrej Krejcar

Decision Support and Control Systems

Creating a Knowledge Base to Support the Concept of Lean Administration Using Expert System NEST 281
Radim Dolak

Fuzzy Bionic Hand Control in Real-Time Based on Electromyography Signal Analysis. 292
Martin Tabakov, Krzysztof Fonal, Raed A. Abd-Alhameed, and Rami Qahwaji

Controllability of Positive Discrete-Time Switched Fractional Order Systems for Fixed Switching Sequence. 303
Artur Babiarczyk, Adrian Łęgowski, and Michał Niezabitowski

A Trace Clustering Solution Based on Using the Distance Graph Model 313
Quang-Thuy Ha, Hong-Nhung Bui, and Tri-Thanh Nguyen

On Expressiveness of $TCTL_h^A$ for Model Checking Distributed Systems. 323
Naima Jbeli, Zohra Sbaï, and Rahma Ben Ayed

Innovations in Intelligent Systems

Cost Optimizing Methods for Deterministic Queuing Systems. 335
Martin Gavalec and Zuzana Němcová

User Authentication Through Keystroke Dynamics as the Protection Against Keylogger Attacks. 345
Adrianna Kozierkiewicz-Hetmańska, Aleksander Marciniak, and Marcin Pietranik

Data Warehouses Federation as a Single Data Warehouse 356
Rafał Kern

A Solution for Automatically Malicious Web Shell and Web Application Vulnerability Detection	367
<i>Van-Giap Le, Huu-Tung Nguyen, Dang-Nhac Lu, and Ngoc-Hoa Nguyen</i>	
Data Evolution Method in the Procedure of User Authentication Using Keystroke Dynamics	379
<i>Adrianna Kozierkiewicz-Hetmanska, Aleksander Marciniak, and Marcin Pietranik</i>	
Cooperative Strategies for Decision Making and Optimization	
Multiagent Cooperation for Decision-Making in the Car-Following Behavior	391
<i>Anouer Bennajeh, Fahem Kebair, Lamjed Ben Said, and Samir Aknine</i>	
GRASP Applied to Multi-Skill Resource-Constrained Project Scheduling Problem.	402
<i>Paweł B. Myszkowski and Jędrzej J. Siemiński</i>	
Biological Regulation and Psychological Mechanisms Models of Adaptive Decision-Making Behaviors: Drives, Emotions, and Personality	412
<i>Amine Chohra and Kurosh Madani</i>	
A Constraint-Based Approach to Modeling and Solving Resource-Constrained Scheduling Problems	423
<i>Paweł Sitek and Jarosław Wikarek</i>	
Some Remarks on the Mean-Based Prioritization Methods in AHP	434
<i>Konrad Kułakowski and Anna Kędzior</i>	
Bi-criteria Data Reduction for Instance-Based Classification	444
<i>Ireneusz Czarnowski, Joanna Jędrzejowicz, and Piotr Jędrzejowicz</i>	
Dynamic Cooperative Interaction Strategy for Solving RCPSP by a Team of Agents.	454
<i>Piotr Jędrzejowicz and Ewa Ratajczak-Ropel</i>	
Influence of the Waiting Strategy on the Performance of the Multi-Agent Approach to the DVRPTW	464
<i>Dariusz Barbucha</i>	
Local Termination Criteria for Stochastic Diffusion Search: A Comparison with the Behaviour of Ant Nest-Site Selection	474
<i>J. Mark Bishop, Andrew O. Martin, and Elva J.H. Robinson</i>	

Meta-Heuristics Techniques and Applications

Optimizing Urban Public Transportation with Ant Colony Algorithm 489
Elena Kochegurova and Ekaterina Gorokhova

A Hybrid Approach Based on Particle Swarm Optimization and Random
Forests for E-Mail Spam Filtering 498
Hossam Faris, Ibrahim Aljarah, and Bashar Al-Shboul

Fuzzy Logic and PD Control Strategies of a Three-Phase Electric
Arc Furnace 509
*Loredana Ghiormez, Octavian Prostean, Manuela Panoiu,
and Caius Panoiu*

Hybrid Harmony Search Combined with Variable Neighborhood Search
for the Traveling Tournament Problem. 520
Meriem Khelifa and Dalila Boughaci

Web Systems and Human-Computer Interaction

Utilizing Linked Open Data for Web Service Selection and Composition
to Support e-Commerce Transactions. 533
Nikolaos Vesyropoulos, Christos K. Georgiadis, and Elias Pimenidis

Improved Method of Detecting Replay Logo in Sports Videos Based
on Contrast Feature and Histogram Difference 542
Kazimierz Choroś and Adam Gogol

Dynamic MCDA Approach to Multilevel Decision Support in Online
Environment. 553
Jarosław Jankowski, Jarosław Wątróbski, and Paweł Ziemia

Usability Testing of a Mobile Friendly Web Conference Service. 565
*Ida Błażejczyk, Bogdan Trawiński, Agnieszka Indyka-Piasecka,
Marek Kopel, Elżbieta Kukla, and Jarosław Bernacki*

Latent Email Communication Patterns 580
Miloš Vacek

Spectral Saliency-Based Video Deinterlacing 590
Umang Aggarwal, Maria Trocan, and Francois-Xavier Coudoux

Author Index 599

Contents – Part II

Applications of Software Agents

Agent-Based Approach for Ship Damage Control	3
<i>Eugénio Oliveira and Paulo Martins</i>	
Collective Profitability and Welfare in Selling-Buying Intermediation Processes	14
<i>Amelia Bădică, Costin Bădică, Mirjana Ivanović, and Ionuț Buligiu</i>	
Fault-Tolerance in XJAF Agent Middleware	25
<i>Mirjana Ivanović, Jovana Ivković, Milan Vidaković, Nikola Luburić, and Costin Bădică</i>	
Agent-Based Support of a Virtual eLearning Space	35
<i>Emil Doychev, Asya Stoyanova-Doycheva, Stanimir Stoyanov, and Vanya Ivanova</i>	
Generalized Nets for Agent-Based Modeling	45
<i>Galina Ilieva and Stanislava Klisarova</i>	

Social Media and the Web of Linked Data

Networking Readers: Using Semantic and Geographical Links to Enhance e-Books Reading Experience	59
<i>Dan Cristea, Ionuț Pistol, Daniela Gîfu, and Daniel Anechitei</i>	
Detecting Satire in Italian Political Commentaries	68
<i>Rodolfo Delmonte and Michele Stingo</i>	
Semantic Diversification of Text Search Results	78
<i>Andrei Micu and Adrian Iftene</i>	

Computational Swarm Intelligence

Ant Colony System with a Restart Procedure for TSP	91
<i>Rafał Skinderowicz</i>	
Differential Cryptanalysis of FEAL4 Using Evolutionary Algorithm	102
<i>Kamil Dworak and Urszula Boryczka</i>	
Differential Evolution in a Recommendation System Based on Collaborative Filtering	113
<i>Urszula Boryczka and Michał Bałchanowski</i>	

Using Genetic Algorithm to Aesthetic Patterns Design. 123
Grzegorz T. Machnik, Miłosław Chodacki, and Wiesław Kotarski

Ambient Networks

A Survey of ADAS Technologies for the Future Perspective
of Sensor Fusion. 135
Adam Ziebinski, Rafal Cupek, Hueseyin Erdogan, and Sonja Waechter

Modified Random Forest Algorithm for Wi-Fi Indoor Localization System . . . 147
Rafał Górak and Marcin Luckner

Smart Underwater Positioning System and Simultaneous Communication. . . . 158
Bogusław Szlachetko and Michał Lower

Hierarchical Data Aggregation Based Routing for Wireless
Sensor Networks. 168
Soumyabrata Saha, Rituparna Chaki, and Nabendu Chaki

Towards Cloud-Based Data Warehouse as a Service for Big Data Analytics . . . 180
Hichem Dabbèchi, Ahlem Nabli, and Lotfi Bouzguenda

Performance Comparison of Sensor Implemented in Smartphones
with X-IMU. 190
Juraj Machaj, Jan Racko, and Peter Brida

Design Solution of Centralized Monitoring System of Airport Facilities 200
Josef Horalek and Tomas Svoboda

Room-Level Indoor Localization Based on Wi-Fi Signals. 209
Filip Maly, Pavel Kriz, and Martin Jedlicka

IPv6 Firewall Functions Analysis 219
Josef Horalek and Vladimír Sobeslav

Information Technology in Biomedicine

Novel Edge Detection Scheme in the Trinion Space for Use in Medical
Images with Multiple Components 231
Dawit Assefa and Ondřej Krejcar

Simulations of Light Propagation and Thermal Response in Biological
Tissues Accelerated by Graphics Processing Unit 242
*Jakub Mesicek, Jan Zdarsky, Rafael Dolezal, Ondřej Krejcar,
and Kamil Kuca*

Comparison of RUST and C# as a Tool for Creation of a Large Agent-Based Simulation for Population Prediction of Patients with Alzheimer's Disease in EU	252
<i>Richard Cimler, Ondřej Doležal, and Pavel Pscheidl</i>	
Dorsal Hand Recognition Through Adaptive YCbCr Imaging Technique	262
<i>Orcan Alpar and Ondrej Krejcar</i>	
Designing QSAR Models for Promising TLR4 Agonists Isolated from <i>Euodia Asteridula</i> by Artificial Neural Networks Enhanced by Optimal Brain Surgeon	271
<i>Rafael Dolezal, Jan Trejbal, Jakub Mesicek, Agata Milanov, Veronika Racakova, and Jiri Krenek</i>	
Exploration of Autoimmune Diseases Using Multi-agent Systems	282
<i>Richard Cimler, Martina Husáková, and Martina Koláčková</i>	
Decision Support Biomedical Application Based on Consistent Optimization of Preference Matrices	292
<i>Richard Cimler, Martin Gavalec, Karel Mls, and Daniela Ponce</i>	
Implementation of Artificial Neural Network on Graphics Processing Unit for Classification Problems	303
<i>Syahid Anuar, Roselina Sallehuddin, and Ali Selamat</i>	
Impact of Smart and Intelligent Technology on Education	
Ontology-Based Education Support System for Solving Emergency Incidents	313
<i>Martina Husáková</i>	
Innovations in Software Engineering Subjects	323
<i>Petra Poulouva and Ivana Simonova</i>	
Collective Unconscious Interaction Patterns in Classrooms	333
<i>Roberto Araya and Josefina Hernández</i>	
Smart Mobile Devices in the Higher Education: Comparative Study of FIM UHK in 2013/14 to 2015/16	343
<i>Petra Poulouva and Ivana Simonova</i>	
Motivation System on Prediction Market	354
<i>Mikuláš Gangur</i>	
Decision Processes in Smart Learning Environments	364
<i>Peter Mikulecky</i>	

Big Data Mining and Searching

Upgrading Event and Pattern Detection to Big Data	377
<i>Soumaya Cherichi and Rim Faiz</i>	
A Graph-Path Counting Approach for Learning Head Output Connected Relations	387
<i>Nuran Peker and Alev Mutlu</i>	
A Framework for Analysis of Ontology-Based Data Access	397
<i>Agnieszka Konys</i>	
Towards a Real-Time Big GeoData Geolocation System Based on Visual and Textual Features.	409
<i>Sarra Hasni and Sami Faiz</i>	
A Parallel Implementation of Relief Algorithm Using Mapreduce Paradigm . . .	418
<i>Jamila Yazidi, Waad Bouaguel, and Nadia Essoussi</i>	

Machine Learning in Medicine and Biometrics

Rational Discovery of GSK3-Beta Modulators Aided by Protein Pocket Prediction and High-Throughput Molecular Docking	429
<i>Rafael Dolezal, Michaela Melikova, Jakub Mesicek, and Kamil Kuca</i>	
A Machine-Learning Approach to the Automated Assessment of Joint Synovitis Activity	440
<i>Konrad Wojciechowski, Bogdan Smolka, Rafal Cupek, Adam Ziebinski, Karolina Nurzynska, Marek Kulbacki, Jakub Segen, Marcin Fojcik, Pawel Mielnik, and Sebastian Hein</i>	
Intersection Method, Union Method, Product Rule and Weighted Average Method in a Dispersed Decision-Making System - a Comparative Study on Medical Data	451
<i>Małgorzata Przybyła-Kasperek and Agnieszka Nowak-Brzezińska</i>	
The Application of the Region Growing Method to the Determination of Arterial Changes	462
<i>Ewelina Sobotnicka, Aleksander Sobotnicki, Krzysztof Horoba, and Piotr Porwik</i>	
Mining Medical Knowledge Bases	472
<i>Agnieszka Nowak-Brzezińska, Tomasz Rybotycki, Roman Simiński, and Małgorzata Przybyła-Kasperek</i>	
The Matching Method for Rectified Stereo Images Based on Minimal Element Distance and RGB Component Analysis	482
<i>Pawel Popielski, Robert Koprowski, Zygmunt Wróbel, Sławomir Wilczyński, Rafał Doroz, Krzysztof Wróbel, and Piotr Porwik</i>	

KBExplorator and KBExpertLib as the Tools for Building Medical Decision Support Systems	494
<i>Roman Simiński and Agnieszka Nowak-Brzezińska</i>	
Building Medical Guideline for Intensive Insulin Therapy of Children with T1D at Onset	504
<i>Rafał Deja</i>	
A New Personal Verification Technique Using Finger-Knuckle Imaging	515
<i>Rafał Doroz, Krzysztof Wrobel, Piotr Porwik, Hossein Safaverdi, Michał Senejko, Janusz Jezewski, Paweł Popielski, Sławomir Wilczyński, Robert Koprowski, and Zygmunt Wrobel</i>	
Automatic Detection of Fetal Abnormality Using Head and Abdominal Circumference	525
<i>Vidhi Rawat, Alok Jain, Vibhakar Shrimali, and Abhishek Rawat</i>	
Low Resource Language Processing	
On One Approach of Solving Sentiment Analysis Task for Kazakh and Russian Languages Using Deep Learning.	537
<i>Narynov Sergazy Sakenovich and Arman Serikuly Zharmagambetov</i>	
Morphological Transducer for Mongolian.	546
<i>Zoljargal Munkhjargal, Altangerel Chagnaa, and Purev Jaimai</i>	
An Approach of Automatic Extraction of Domain Keywords from the Kazakh Text	555
<i>Yermek Alimzhanov and Madina Mansurova</i>	
Inferring of the Morphological Chunk Transfer Rules on the Base of Complete Set of Kazakh Endings	563
<i>Ualsher Tukeyev, Aida Sundetova, Balzhan Abduali, Zhadyra Akhmediyeva, and Nurbolat Zhanbussunov</i>	
Author Index	575