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Agents and Multi-Agent Systems: Technologies and Applications 2020

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Multi-Agent Systems in Transportation Systems
Dr. Mahdi Zargayouna, IFSTTAR, France

Preface

This volume contains the proceedings of the 14th KES Conference on Agent and Multi-Agent Systems—Technologies and Applications (KES-AMSTA 2020) held as a virtual conference between June 17 and 19, 2020. The conference was organized by KES International, its focus group on agent and multi-agent systems, and University of Zagreb, Faculty of Electrical Engineering and Computing. The KES-AMSTA conference is a subseries of the KES conference series.

Following the success of previous KES Conferences on Agent and Multi-Agent Systems—Technologies and Applications, held in St. Julians, Gold Coast, Vilamoura, Puerto de la Cruz, Sorrento, Chania, Hue, Dubrovnik, Manchester, Gdynia, Uppsala, Incheon, and Wroclaw, the conference featured the usual keynote talks, presentations, and invited sessions closely aligned to its established themes.

KES-AMSTA is an international scientific conference for discussing and publishing innovative research in the field of agent and multi-agent systems and technologies applicable in the Digital and Knowledge Economy. The aim of the conference is to provide an internationally respected forum for both the research and industrial communities on their latest work on innovative technologies and applications that is potentially disruptive to industries. Current topics of research in the field include technologies in the area of decision making, big data analysis, cloud computing, Internet of Things (IoT), business informatics, artificial intelligence, social systems, health, transportation systems and smart environments, etc. Special attention is paid on the feature topics: agent communication and architectures, modeling and simulation of agents, agent negotiation and optimization, business informatics, intelligent agents, and multi-agent systems.

The conference attracted a substantial number of researchers and practitioners from all over the world who submitted their papers for main track covering the methodologies of agent and multi-agent systems applicable in the smart environments and knowledge economy and had four invited sessions on specific topics within the field. Submissions came from 16 countries. Each paper was peer reviewed by at least two members of the International Program Committee and International Reviewer Board. 33 papers were selected for presentation and publication in the volume of the KES-AMSTA 2020 proceedings.

The Program Committee defined the following main tracks: Software Agents in Smart Environment and Intelligent Agents and Cloud Computing. In addition to the main tracks of the conference, there were the following invited sessions: Agent-based Modeling and Simulation, Business Process Management, Agents and MAS applied to Well-being and Health, Business Informatics, and MAS in Transportation Systems.

Accepted and presented papers highlight new trends and challenges in agent and multi-agent research. We hope that these results will be of value to the research community working in the fields of artificial intelligence, collective computational intelligence, health, robotics, smart systems, and, in particular, agent and multi-agent systems, technologies, tools, and applications.

The Chairs' special thanks go to the following special session organizers: Dra. Maria del Rosario Baltazar Flores, Instituto Tecnologico de Leon, Mexico; Prof. Arnulfo Alanis Garza, Instituto Tecnológico de Tijuana, México; Prof. Hiroshi Takahashi, Keio University, Japan; Prof. Setsuya Kurahashi, University of Tsukuba, Tokyo, Japan; Prof. Takao Terano, Tokyo Institute of Technology, Japan; and Dr. Mahdi Zargayouna, IFSTTAR, France, for their excellent work.

Thanks are due to the Program Co-chairs, all Program and Reviewer Committee members and all the additional reviewers for their valuable efforts in the review process, which helped us to guarantee the highest quality of selected papers for the conference.

We cordially thank all authors for their valuable contributions and all of the other participants in this conference. The conference would not be possible without their support.

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Scotland, UK — J. Chen-Burger
Zagreb, Croatia — M. Kusek
Opava, Czech Republic — R. Sperka
Shoreham-by-sea, UK — Robert J. Howlett
Sydney, Australia/Liverpool, UK/Shoreham-by-sea, UK — Lakhmi C. Jain
April 2020

Contents

Software Agents in Smart Environment

Revitalising and Validating the Novel Approach of xAOSF Framework Under Industry 4.0 in Comparison with Linear SC 3
Fareed Ud Din, David Paul, Joe Ryan, Frans Henskens, and Mark Wallis

Natural Language Agents in a Smart Environment 17
Renato Soic and Marin Vukovic

Potentials of Digital Business Models for the European Agriculture Sector 27
Ralf-Christian Härting, Raphael Kaim, and Frieder Horsch

Agent-Based Approach for User-Centric Smart Environments 37
Katarina Mandaric, Pavle Skocir, and Gordan Jezic

Providing Efficient Redundancy to an Evacuation Support System Using Remote Procedure Calls 47
Itsuki Tago, Kota Konishi, Munehiro Takimoto, and Yasushi Kambayashi

Process Model for Accessible Website User Evaluation 57
Matea Zilak, Ivana Rasan, Ana Keselj, and Zeljka Car

Intelligent Agents and Cloud Computing

A Comparative Study of Trust and Reputation Models in Mobile Agent Systems 71
Donies Samet, Farah Barika Ktata, and Khaled Ghedira

Agent-Based Control of Service Scheduling Within the Fog Environment 83
Petar Krivic, Jakov Zivkovic, and Mario Kusek

On the Conception of a Multi-agent Analysis and Optimization Tool for Mechanical Engineering Parts 93
Paul Christoph Gembarski

Predicting Dependency of Approval Rating Change from Twitter Activity and Sentiment Analysis 103
Demijan Grgić, Mislav Karaula, Marina Bagić Babac, and Vedran Podobnik

Protected Control System with RSA Encryption 113
Danenkov Ilya, Alexey Margun, Radda Iureva, and Artem Kremlev

Artificial Intelligent Agent for Energy Savings in Cloud Computing Environment: Implementation and Performance Evaluation 127
Leila Ismail and Huned Materwala

Agent-Based Modeling and Simulation and Business Process Management

Design of Technology for Prediction and Control System Based on Artificial Immune Systems and the Multi-agent Platform JADE 143
G. A. Samigulina and Z. I. Samigulina

A Multi-agent Framework for Visitor Tracking in Open Cultural Places 155
Muhammed Safarini, Rasha Safarini, Thaer Thaher, Amjad Rattrout, and Muath Sabha

Toward Modeling Based on Agents that Support in Increasing the Competitiveness of the Professional of the Degree in Computer Science 167
María del Consuelo Salgado Soto, Margarita Ramírez Ramírez, Hilda Beatriz Ramírez Moreno, and Esperanza Manrique Rojas

Human Tracking in Cultural Places Using Multi-agent Systems and Face Recognition 177
Adel Hassan, Aktham Sawan, Amjad Rattrout, and Muath Sabha

A Conceptual Framework for Agent-Based Modeling of Human Behavior in Spatial Design 187
Dario Esposito, Ilenia Abbattista, and Domenico Camarda

Real-Time Autonomous Taxi Service: An Agent-Based Simulation 199
Negin Alisoltani, Mahdi Zargayouna, and Ludovic Leclercq

Modelling Timings of the Company's Response to Specific Customer Requirements 209
Petr Suchánek and Robert Bucki

Importance of Process Flow and Logic Criteria for RPA Implementation 221
Michal Halaška and Roman Šperka

Agents and Multi-agents Systems Applied to Well-Being and Health

Multiagent System as Support for the Diagnosis of Language Impairments Using BCI-Neurofeedback: Preliminary Study 235
Eugenio Martínez, Rosario Baltazar, Carlos A. Reyes-García, Miguel Casillas, Martha-Alicia Rocha, Socorro Gutierrez, and M. Del Consuelo Martínez Wbaldo

Multi-agent System for Therapy in Children with the Autistic Spectrum Disorder (ASD), Utilizing Smart Vision Techniques—SMA-TEAVI 245
Ruben Sepulveda, Arnulfo Alanis, Marina Alvelais Alarcón, Daniel Velazquez, and Karina Alvarado

Multiagent Monitoring System for Oxygen Saturation and Heart Rate 253
Fabiola Hernandez-Leal, Arnulfo Alanis, and Efraín Patiño

Multi-agent System for Obtaining Parameters in Concussions—MAS-OPC: An Integral Approach 261
Gustavo Ramírez Gonzalez, Arnulfo Alanis, Marina Alvelais Alarcón, Daniel Velazquez, and Bogart Y. Márquez

Data Analysis of Sensors in Smart Homes for Applications Healthcare in Elderly People 271
Uriel Huerta, Rosario Baltazar, Anabel Pineda, Martha Rocha, and Miguel Casillas

A Genetic Algorithm-Oriented Model of Agent Persuasion for Multi-agent System Negotiation 281
Samantha Jiménez, Víctor H. Castillo, Bogart Yail Márquez, Arnulfo Alanis, Leonel Soriano-Equigua, and José Luis Álvarez-Flores

Business Informatics

Impacts of the Implementation of the General Data Protection Regulations (GDPR) in SME Business Models—An Empirical Study with a Quantitative Design 295
Ralf-Christian Härting, Raphael Kaim, and Dennis Ruch

A Study on the Influence of Advances in Communication Technology on the Intentions of Urban Park Users 305
Noriyuki Sugahara and Masakazu Takahashi

Construction of News Article Evaluation System Using Language Generation Model 313
Yoshihiro Nishi, Aiko Suge, and Hiroshi Takahashi

Constructing a Valuation System Through Patent Document Analysis 321
Shohei Fujiwara, Yusuke Matsumoto, Aiko Suge, and Hiroshi Takahashi

Modeling of Bicycle Sharing Operating System with Dynamic Pricing by Agent Reinforcement Learning 331
Kohei Yashima and Setsuya Kurahashi

Omni-Channel Challenges Facing Small- and Medium-Sized Enterprises: Balancing Between B2B and B2C 343
Tomohiko Fujimura and Yoko Ishino

A Formal, Descriptive Model for the Business Case of Managerial Decision-Making 355
Masaaki Kunigami, Takamasa Kikuchi, Hiroshi Takahashi, and Takao Terano

Author Index 367

About the Editors

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Dr. Robert J. Howlett is the Executive Chair of KES International, a non-profit organization that facilitates knowledge transfer and the dissemination of research results in areas including intelligent systems, sustainability, and knowledge transfer. He is a Visiting Professor at Bournemouth University in the UK. His technical expertise is in the use of intelligent systems to solve industrial problems. He has been successful in applying artificial intelligence, machine learning, and related technologies to sustainability and renewable energy systems; condition monitoring, diagnostic tools and systems, and automotive electronics and engine management systems. His current research work is focused on the use of smart microgrids to achieve reduced energy costs and lower carbon emissions in areas such as housing and protected horticulture.

Dr. Lakhmi C. Jai, Ph.D., M.E., B.E. (Hons) Fellow (Engineers Australia) is with the University of Technology Sydney, Australia, and Liverpool Hope University, UK. Professor Jain serves the KES International for providing a professional community the opportunities for publications, knowledge exchange, cooperation, and teaming. Involving around 5,000 researchers drawn from universities and companies worldwide, KES facilitates international cooperation and generates synergy in teaching and research. KES regularly provides networking opportunities for professional community through one of the largest conferences of its kind in the area of KES.