Preface of the 8th International Workshop on Combinations of Intelligent Methods and Applications

Ioannis Hatzilygeroudis[1], Vasile Palade[2] and Isidoros Perikos[1]

[1] University of Patras, Patras, 26054, Greece
[2] Coventry University, Cogent Computing Applied Research Centre, CV1 5FB Coventry, UK
{ihatz, perikos}@ceid.upatras.gr

The combination of different intelligent methods is a very active research area in Artificial Intelligence (AI). The aim is to create integrated or hybrid methods that benefit from each of their components. It is generally believed that complex problems can be easier solved with such integrated or hybrid methods. Some of the existing efforts combine what are called soft computing methods (fuzzy logic, neural networks and evolutionary algorithms) either among themselves or with more traditional AI technologies such as logic and rules. Another stream of efforts integrates case-based reasoning and machine learning with soft computing and traditional AI methods. Yet another integrates agent-based approaches with logic and non-symbolic approaches. Some of the combinations have been quite important and have been more extensively used, like neuro-symbolic methods, neuro-fuzzy methods and methods combining rule-based and case-based reasoning. However, there are other combinations that are still under investigation, such as those related to semantic web and deep learning as well as to swarm intelligence algorithms. In some cases, combinations are based on first principles, but in most cases, they are created in the context of specific applications. In this context, the CIMA workshop focuses on the examination and the presentation of a number of current efforts that use combinations of methods or techniques to solve complex problems in various areas. Most of them are connected with specific applications, whereas the rest are combinations based on principles.

This year CIMA 2018 is held in conjunction with the 30th International Conference on Tools with Artificial Intelligence (ICTAI-2018) in Volos, Greece. We received 20 submissions from 10 countries which were thoroughly reviewed by the program committee members. In total, 12 high quality papers were accepted for presentation in the conference and publication in the proceedings, but finally 7 of them managed to register.

The first paper, of Kostas Kolomvatsos and Christos Anagnostopoulos, addresses the problem of query allocation in cloud computing. The paper discusses use of an ensemble similarity scheme responsible to deliver the complexity class for each query, to help in deciding allocation to an edge node. The large number of simulations conducted show quite interesting results. The second paper, of Lorenzo Servadei et al, analyzes machine learning and statistical analysis algorithms for supporting the process of automated data generation in hardware design configuration. Authors show how statistical analysis and machine learning can help in the correct learning of a

mapping function to the register interface area in a certain constraints boundary, and express useful metrics for pinpointing the validity and quality of the design settings. The paper of Dimitrios Kouremenos et al presents a statistical machine translation for Greek to Greek Sign Language and authors formulate a Rule-Based Machine Translation system, which quickly produces high quality large glossed Greek Sign Language corpus. The paper of Erich Teppan and Giacomo Da Col presents an approach based on a combination of event-based simulation and genetic algorithms for automatically generating composite dispatching rules for job shop scheduling problems, and reports quite interesting performance. The fifth paper, of Weiping Yu et al, presents a combined neural and genetic algorithm model for data center temperature control, which performs better than artificial methods and traditional greedy algorithms. The sixth paper, of Djamal Habet and Cyril Terrioux, proposes Conflict-History Search (CHS), a new dynamic and adaptive branching heuristic for CSP solving, which is based on the history of search failures that happen as soon as a domain of a variable is emptied after constraints propagation. The results are quite interesting. The final paper, of Bin Wang et al, presents a new knowledge representation and reasoning tool to handle uncertainty, inconsistencies, and preferences by combining the ideas of LP^{MLN}, an extension of Answer Set Programming (ASP), which is designed to handle uncertainty and inconsistencies in knowledge representation by incorporating the methods in Markov Logic Networks, and logic programming with ordered disjunction.

We would like to thank all who contributed to the CIMA 2018 workshop. First of all, we thank the authors for submitting their high-quality research works to the workshop. We would like to thank the members of the program committee for their valuable review contributions. Finally, we would like to thank the PC Chair of ICTAI 2018, Dr. Miltos Alamaniotis, for his support in this effort. We do hope that CIMA 2018 has been and will be a valuable addition to the further development of the CIMA workshop series and the related research communities.

Committees

Program Chairs

Ioannis Hatzilygeroudis, University of Patras (Greece)
Vasile Palade, Coventry University (UK)
Isidoros Perikos, University of Patras (Greece)

Program Committee

Ajith Abraham, Machine Intelligence Research Labs (MIR Labs)
Plamen Angelov, Lancaster University (UK)
Abdulrahman Atahhan, Coventry University (UK)
Nick Bassiliades, Aristotle University of Thessaloniki (Greece)
Maumita Bhattacharya, Charles Sturt University (Australia)
Nikolaos Bourbakis, Wright State University (USA)

Kit-Yan Chan, Curtin University (Australia)
Gloria Cerasela Crisan, University of Bacau (Romania)
Artur D'Avila Garcez, City University London (UK)
Georgios Dounias, University of the Aegean (Greece)
Anna Esposito, Seconda Università di Napoli (SUN) and IIASS (Italy)
Wei Fang, Jiangnan University (China)
Foteini Grivokostopoulou, University of Patras (Greece)
Ioannis Hatzilygeroudis, University of Patras (Greece) (Co-chair)
Andreas Holzinger, Graz University of Technology (Austria)
Constantinos Koutsojannis, TEI of Western Greece (Greece)
Konstantinos Kovas, University of Patras (Greece)
Rudolf Kruse, University of Magdeburg (Germany)
George Magoulas, Birkbeck College (UK)
Christos Makris, University of Patras (Greece)
Ashish Mani, Dayalbagh Educational Institute, Dayalbagh (India)
Antonio Moreno, University Rovira i Virgili (Spain)
Daniel C. Neagu, University of Bradford, (UK)
Muaz Niazi, Comsats Institute of IT, Islamabad (Pakistan)
Vasile Palade, Coventry University (UK) (Co-Chair)
Isidoros Perikos, University of Patras (Greece) (Co-chair)
Camelia Pintea, Technical University of Cluj-Napoca (Romania)
Jim Prentzas, Democritus University of Thrace (Greece)
Roozbeh Razavi-Far, University of Windsor (Canada)
David Sanchez, University Rovira i Virgili (Spain)
Kyriakos Sgarbas, University Of Patras (Greece)
Jun Sun, Jiangnan University (China)
Juan Velasquez, University of Chile (Chile)
Douglas Vieira, Enacom-Handcrafted Technologies (Brazil)
Maria Virvou, University of Piraeus (Greece)