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Special issue of Teams in Multiagent Systems (TEAMAS)

Preface

The latter part of the 20th and the beginning of the 21st centuries have witnessed a significant transformation from work organised around individual jobs to team-based work structures together with a focus on organisational efficiency. This is due to the increasing complexity of tasks, which in many cases cannot be performed by single individuals. Additionally, changes in technology facilitate workers in distinct locations to communicate and collaborate at low or no cost. On that account, team composition and formation research is of interest to both companies to assure their competitiveness and to a wide range of emerging applications exploiting multiagent collaboration (e.g. crowdsourcing, human-agent collaborations).

The first TEAMAS Workshop hosted by the Autonomous Agents and Multiagent Systems conference (AAMAS 2017) intended to promote the discussion on the theory and practical applications of Artificial Intelligence and multiagent technologies involving teams, providing a playground for cross-fertilisation for all the disciplines tackling team composition, formation, and teamwork (e.g. organisational psychology, multiagent systems, education, or business management). It brought together social scientists, agent researchers, developers, engineers and practitioners interested in team formation, encompassing: peer teaching for improving team performance; team formation algorithms (including the consideration of psychological and personality characteristics of each member); automatic exercise selection for team members training; and human-AI collaboration mechanisms.

This issue contains selected papers from the TEAMAS workshop, which took place on the 10th May 2017 in Singapore. From the eight papers presented at the workshop, the best two were invited to submit an extended version for this special issue with Fundamenta Informaticae. The contributions that were eventually submitted underwent a thorough two- or three- stage reviewing procedure.

The paper "Human-aware Contingent Planning" proposes a model for contingent planning that is able to reason about human help in scenarios with uncertainty and possibility of failure. Contingent planning models a robot that must achieve a goal in a partially observable environment with non-deterministic actions. However, the robot will fail to accomplish its task if there is an unavoidable dead-end state. In this model, authors develop a symbiotic autonomous agent that proactively and autonomously asks for human help when its tasks would be unsolvable otherwise.

Focused on educational domains, the paper "Solving the Team Composition Problem in a Classroom" deals with the problem of forming teams in a school. This refers to finding an assignment

of students to groups in such a way that preferences are maximally satisfied. Considering that this problem is NP-hard, authors approach it using two different MaxSAT models, called maximising and minimising encoding. This is a flexible approach that can deal with different classroom configurations, providing an optimal solution in a reasonable amount of time.

Additionally, the paper "Optimizing Peer Teaching to Enhance Team Performance" by Zheyuan Shi and Fei Fang was selected as one of the best workshop papers at AAMAS 2017. Hence, it is not contained in this special issue, as the revised version was published in the Springer collection for the best AAMAS 2017 workshop papers (Lecture Notes in Computer Science, volume 10642).

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Special issue editors:

Ewa Andrejczuk
STE-NTU Robotics Corporate Laboratory
Nanyang Technological University, Singapore
ewaa@ntu.edu.sg

Juan M. Alberola
VRAIN, Universitat Politècnica de València, Spain
Florida Universitària, Catarroja, Spain
jalberola@dsic.upv.es

Leandro Marcolino
School of Computing and Communications
Lancaster University, Lancaster, United Kingdom
l.marcolino@lancaster.ac.uk

Paolo Torroni
DISI, Università di Bologna, Italy
paolo.torroni@unibo.it