
Preface

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Biographical notes: Jürgen Dix is Professor for Artificial Intelligence and Vice-Dean of the Faculty of Mathematics, Computer Science and Engineering at the Clausthal University of Technology. For 30 years, he is doing basic research in knowledge representation and reasoning, deductive databases and multi-agent systems. He co-authored or co-edited more than 20 books, over 70 journal publications and organised/chaired more than 40 conferences and workshops. He is on the editorial boards of six journals and several steering committees.

Tobias Ahlbrecht is a PhD student in the Computational Intelligence Group at the Department of Informatics of Clausthal University of Technology. He earned his Master's degree in Computer Science from the same department in 2016. He is a co-Organiser of the Multi-Agent Programming Contest since 2013, and his current research interests include multi-agent systems modelling and simulation.

Niklas Fiekas is a graduate student in Clausthal, Germany. He earned his Bachelor's degree in Computer Science from the Clausthal University of Technology in 2016. Previously, he was working on scalable multi-agent simulation in the Decentralised Simulation project within the Simulation Science Center Clausthal/Göttingen.

This special issue is about the 2016 edition of the annual Multi-agent Programming Contest that we are organising since 2005 at Clausthal University of Technology. Multi-agent systems consist of autonomous agents. They are studied since almost two decades and intended to solve complex problems where traditional centralised approaches reach their limits.

The aim of the contest is to investigate the potential of programming languages, platforms, and tools for such multi-agent systems.

To this aim, we are developing scenarios where two teams compete against each other in order to solve a complex task. In each round a winner is determined. The team that scores most wins the tournament (for details we refer to the first paper in this special issue).

While we believe that the paradigm of autonomous agents is the most promising approach to go about our challenge, we also allow traditional approaches based on conventional programming languages (even completely centralised approaches).

Important research questions are, e.g.,

- 1 what kind of scenarios can be better tackled with agent technology
- 2 exactly which agent technology pays off
- 3 when is a blend of traditional techniques and agents most promising.

We hope that the contest sheds some light on the features needed for future agent programming languages and helps to improve existing ones.

As opposed to many other contests, we are not (yet) interested in real-time systems: agent related techniques currently available are perhaps not yet mature enough to deal with these issues.

We would like to understand the problem on a higher level and not deal with run-time optimisation or sophisticated implementation techniques.

Therefore, we allow the agents ample time for deliberation in each step. This should make it easy for newcomers, in particular students, to enter the contest successfully.

This special issue contains a detailed explanation of the scenario in 2016, as well as descriptions of all the teams, including their strategies.

The source codes are available from our homepage. The contest in 2017 is based on the, by and large, same scenario – only some parameters are slightly modified and a couple of smaller features are added to incorporate the lessons learned in 2016.

We would be glad if this issue helps to attract more participants in the future.