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Donghui Lin · Toru Ishida ·
Franco Zambonelli · Itsuki Noda (Eds.)

Massively Multi-Agent Systems II

International Workshop, MMAS 2018
Stockholm, Sweden, July 14, 2018
Revised Selected Papers

Springer

Editors
Donghui Lin
Kyoto University
Kyoto, Japan

Toru Ishida
Kyoto University
Kyoto, Japan

Franco Zambonelli
University of Modena and Reggio Emilia
Reggio Emilia, Italy

Itsuki Noda
National Institute of Advanced Industrial
Science and Technology (AIST)
Tsukuba, Japan

ISSN 0302-9743 ISSN 1611-3349 (electronic)
Lecture Notes in Artificial Intelligence
ISBN 978-3-030-20936-0 ISBN 978-3-030-20937-7 (eBook)
https://doi.org/10.1007/978-3-030-20937-7

LNCS Sublibrary: SL7 – Artificial Intelligence

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Preface

In 2004, the First International Workshop on Massively Multi-agent Systems (MMAS 2004), was held in Kyoto, Japan. It covered several areas related to massively multi-agent systems in the public space: massively multi-agent technology, teams and organization, ubiquitous computing, and ambient intelligence. At that workshop, the discussion centered on why MMAS should be the focus of attention in the era of ubiquitous computing and networking rather than just multi-agent systems (MAS).

Today, we are witnessing the rapid growth of the Internet of Things (IoT), where millions of physical devices with computing facilities are connected with each other in ad hoc ways, but are required to behave coherently. Massively multi-agent systems can be a major design paradigm or an implementation method for IoT and other large-scale distributed systems.

The 2018 International Workshop on Massively Multi-agent Systems (MMAS 2018) was held on July 14, 2018, in Stockholm, Sweden, and was co-located with the 27th International Joint Conference on Artificial Intelligence and the 23rd European Conference on Artificial Intelligence (IJCAI-ECAI 2018), the 17th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2018), and the 35th International Conference on Machine Learning (ICML 2018). The aim of MMAS 2018 was to provide a forum for researchers to discuss enabling technologies, new architectures, promising applications, and challenges of massively multi-agent systems in the era of IoT.

The MMAS 2018 workshop featured four invited speakers: Franco Zambonelli from the University of Modena and Reggio Emilia, who explained key enabling technologies and challenges of distributed speaking objects as a case for massively multi-agent systems; Itsuki Noda from the National Institute of Advanced Industrial Science and Technology, Japan, who presented real applications of massively multi-agent systems in social systems like urban traffic control and disaster response; Andrea Omicini from the University of Bologna, who discussed the potential of logic-based approaches for massively multi-agent systems; and Yohei Murakami from Ritsumeikan University, who introduced a new architecture for distributed massively multi-agent systems with example scenarios in the real world. The workshop included seven oral presentations, which were categorized into two parts: multi-agent systems and IoT, architectures for massively multi-agent systems.

This volume consists of ten papers: seven revised papers presented at the workshop and three post-workshop papers. The post-workshop papers focused on applications of massively multi-agent systems, including two invited papers: Feldman and Bucchiarone introduced the transportation as a service (TaaS) as a massively multi-agent system able to cover a diverse technological spectrum ranging from tightly structured hierarchies to open markets; and Murase et al. presented a software framework called CARAVAN, which was developed for comprehensive simulations on massive parallel computers.

We hope this book will encourage researchers in their efforts to develop new massively multi-agent systems and applications, and to explore how massively multi-agent systems can be used for large-scale social design with big data analysis, high-performance computing, and other leading technologies. We are grateful to all the Organizing Committee members, Program Committee members, workshop presenters and participants, post-workshop authors, and those who have supported this workshop.

March 2019

Donghui Lin
Toru Ishida
Franco Zambonelli
Itsuki Noda

Organization

Workshop Organizers

Donghui Lin	Kyoto University, Japan
Toru Ishida	Kyoto University, Japan
Franco Zambonelli	University of Modena and Reggio Emilia, Italy
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Tomohisa Yamashita	Hokkaido University, Japan
Itsuki Noda	National Institute of Advanced Industrial Science and Technology, Japan

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Munindar P. Singh	North Carolina State University, USA
Tomohisa Yamashita	Hokkaido University, Japan
Itsuki Noda	National Institute of Advanced Industrial Science and Technology, Japan

Sponsor

Grant-in-Aid for Scientific Research (A) (No. 17H00759), JSPS
Grant-in-Aid for Scientific Research (B) (No. 18H03341), JSPS

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