Conference report

The third KES Symposium on Agent and Multi-Agent Systems: Technologies and Applications KES-AMSTA-2009

The third KES Symposium on Agent and Multi-Agent Systems – Technologies and Applications (KES-AMSTA-2009), was held at Uppsala University in Sweden between the 3rd and 5th of June 2009. The Symposium was organized by Uppsala University, KES International and its Focus Group on Agent and Multi-agent Systems. The KES-AMSTA Symposium Series is a sub-series of the KES Conference Series.

The aim of the Symposium was to provide an international forum for scientific research into the technologies and applications of agent and multi-agent systems. Agent and multi-agent systems are an innovative type of modern software systems and have long been recognized as a promising technology for constructing autonomous, complex and intelligent systems. A key development in the field of agent and multi-agent systems has been the specification of agent communication languages and formalization of ontologies. Agent communication languages are intended to provide standard declarative mechanisms for agents to communicate knowledge and make requests of each other, whereas ontologies are intended for conceptualization of the knowledge domain.

The Symposium attracted a large number of scientists and practitioners who submitted their papers to 13 main tracks covering the methodology and applications of agent and multi-agent systems and eight special sessions on specific topics within the field. The papers were selected under the established KES quality principle, that we will not accept unsatisfactory papers simply to maintain or increase the size of the conference, but equally we do not unnecessarily or arbitrarily reject good papers. From the submissions for KES-AMSTA-2009 coming from more than 20 countries throughout the world only 86 papers were selected, from a much larger number, for presentation and inclusion in the proceedings. All papers were rigorously reviewed by two referees that are experts in the field. Mostly were reviewed using the double-blind mode.

The accepted papers are published in Agent and Multi-Agent Systems: Technologies and Applications, Third KES International Symposium, KES-AMSTA 2009, Uppsala, Sweden, June 3–5, 2009, Proceedings. Hakansson, A.; Nguyen, N.T.; Hartung, R.; Howlett, R.J.; Jain, L.C. (Eds.), 2009.

The Program Committee defined the following main tracks: *Computational infrastructure and Agent Systems; Agent systems with implementation and design; Agent architectures; Negotiation protocols; Social and organizational structures; Mobile agents and robots; Simulation systems and game systems; Agent systems and Ontologies; Privacy, safety, and security; Web services and semantic web; Communication & Agent learning system; E-commerce; Information storage and retrieval.*

In addition to the Main Tracks of the Symposium there are also the following eight Special Sessions: *Workshop on Self-Organization in Multi-Agent Systems, Management and eBusiness, Agent-Based Optimization, Mobile and Intelligent Agents for Networks and Services, Engineering Interaction Protocols, Agent-Based Simulation, Decision Making and Systems Optimization, Digital Economy,* and *Distributed Systems and Artificial Intelligence Applications.*

The main tracks were chaired by Prof. Ngoc Thanh Nguyen, Wroclaw University of Technology, Poland and the workshop was chaired by Prof. Dariusz Krol, Wroclaw University of Technology, Poland.

The invited tracks were chaired by Prof. Gordan Jezic, University of Zagreb, Croatia, Prof. Chihab Hanachi, University of Toulouse, IRIT Laboratory, France, Prof. Yun-Heh (Jessica) Chen-Burger, The University of Edinburgh, Prof. David Smith, Software College, Aegean University, Greece and Prof. Pilar Herrero, Facultad de Informática – Universidad Politécnica de Madrid.

The invited tracks were co-chaired by Prof. Chulmo Koo, Chosun University, South Korea and Prof. David Sörhammar, Uppsala University, Prof. Piotr Jedrzejowicz, Gdynia Maritime University, Poland

and Prof. Ireneusz Czarnowski, Gdynia Maritime University, Poland, Prof. Hideki Katagiri, Hiroshima University together with Prof. Ichiro Nishizaki, Hiroshima University and Prof. Kosuke Kato, Hiroshima University,

Symposium

The Symposium spanned over three days. The first day, there was a welcome reception followed by two days of symposium with four parallel sessions. During the symposium, there were three excellent keynote speakers.

Venue

The symposium venue was Uppsala University's main building. The building is situated in the center of the town, close to the cathedral. It was built in the 1880s in a sort of Romanesque Renaissance style. It has magnificent and spacious foyer with light cupolas and the Grand Auditorium, which seats about 1800. There are many grand rooms in the building. The rooms are adorned with numerous portraits depicting kings, cultural figures, and above all professors who have been active at the University over the centuries. Uppsala University's art collection is one of the largest in the country owned by the Swedish state.

Welcome reception

On the 3rd of June 2009, there was a welcome reception in the Uppsala University's main building. During the reception, the dean of social faculty, Anders Malmberg, gave a speech and the Uppsala University guide, Michael Norrby gave a guided tour.

Conference Banquet

The banquet dinner was in the Rikssalen, the former Hall of State, at Uppsala Castle. Uppsala Castle began to be built in 1549 by the swedish king Gustav Vasa. The castle was destined to play a major role for many years in the history of Sweden and of Uppsala. Some events that have taken place at the castle include "Sturemorden" in 1567 (murdered by the mentally ill King Erik XIV of several noblemen accused of treason), and the decision by Gustav II Adolf that Sweden should participate in what would later develop into the Thirty Years' War. It was in the Rikssal in the castle that Schering Rosenhane announced the abdication of Queen Kristina on 6 June, 1654.

During the dinner, Lars Bäcklund, chairman of the City Council of Uppsala municipality gave a welcome speech and presentation of Uppsala. Performances were the duet Andreas Zetterström (pianist/violinist from Uppsala, Sweden) and Nicolas Peyrat (violist from Paris, France), and the Uppsala University own chorus.

Invited Speakers

The Invited Speakers were *Prof. Chengqi Zhang* (Australia), *Prof. Ngoc Thanh Nguyen* (Poland), and *Dr. Caire Giovanni* (Italy), which gave interesting and informative talks of world-class standard.

Prof. Chengqi Zhang presented two originally separated areas, agents (includes autonomous agent and multi-agent systems) and data mining (includes knowledge discovery) that are getting increasingly interrelated in the need of both parties. Such interaction and integration features a bilateral complementation and synergetic enhancement of intelligence and infrastructure for information processing and systems. This keynote speech drew an overall picture of this new area in the scientific family. It covered key contents including the driving forces for the interaction, field structure, state-of-the-art, typical techniques, and case studies. It featured both theoretical and practical innovation and applications of this new area. Case studies on data mining driven trading agents and agent-based financial data mining system was illustrated. Finally, Prof. Zhang discussed the challenges, open issues and prospects of agent-mining interaction.

Prof. Ngoc Thanh Nguyen talked about Computational Collective Intelligence and Knowledge Inconsistency in Multi-agent Environments. Computational Collective Intelligence (CCI) is understood as an AI sub-field dealing with soft computing methods which enable making group decisions or processing knowledge among autonomous units acting in distributed environments. Web-based systems, social networks and multi-agent systems very often need these tools for working out consistent knowledge states, resolving conflicts and making decisions. In this talk, Prof. Nguyen presented several aspects related to the answers of the following questions: Is the intelligence of a collective larger than the intelligence of its members? How to determine the knowledge of a collective on the basis of the knowledge of its members? How to evaluate the quality of the collective knowledge? Many examples showed that the knowledge of a collective is not a usual union of the knowledge of its members. For multi-agent environments, in case of some conflict between agents referring to the proper knowledge of a real world, CCI tools may be very useful for reconciling the inconsistency and processing the knowledge of agents.

Dr. Caire Giovanni presented the last developments of the JADE platform and in particular the WADE extension that allows agents to execute tasks defined according to the workflow metaphor. The challenge in WADE is to combine the expressiveness of workflows with the power and performances of a programming language such as Java so that to bring the advantages of the workflow approach from the BPM level down to the level of system logics definition. In order to achieve that, WADE provides a workflow representation over a Java class and comes with a graphical development environment called WOLF that allows developers creating workflows by means of both a graphical view suitable to define the process flow and a code view suitable to manipulate the low level operations to be performed in each step. Furthermore, WADE embeds a powerful built-in support for invoking Web Services. This feature makes it very easy to create workflows that compose building blocks exposing a Web Service interface.

WADE is at the basis of two mission critical applications deployed by Telecom Italia in the Operations Support System domains. The first one called "Network Neutral Element Manager" implements a mediation layer between network elements and OSS systems. The second one, known as "Wizard", provides step-by-step guidance to technicians performing maintenance operations in the fields.

At the end of the talk, Dr Giovanni presented the future evolutions of JADE and WADE and some conclusions about how agents fit within SOA evolutions and how future applications can be provided with enough flexibility to respond to evolving requirements by means of a combination of artificial intelligence and collective intelligence.

Best papers and best invited session

Chung-Ming Ou was the lead author of the paper "Multi-agent Artificial Immune Systems (MAAIS) for Intrusion Detection: Abstraction from Danger Theory" that won the Best Research paper Award.

Kresimir Jurasovic was the lead author of the paper "Multi-Agent Service Deployment in Telecommunication Networks" that won the Best Student paper Award.

Piotr Jedrzejowicz,won the Best Invited Session Award for the session "Agent-Based Optimization (ABO2009)"

Sponsorships

The conference was funded by Vetenskapsrådet (The Swedish Research Council), Uppsala Municipality, Uppsala University, InterTan AB and SweLine AB. Many thanks go to all sponsors and for their contributions, which made the conference more successful and enjoyable.

Special thanks

Beside keynote speakers, special thanks go to Program Co-Chair for great help in the organizational work and for their efforts in managing reviews and paper selection process. Thanks are due to the Program Committee and the Board of Reviewers, essential for reviewing the papers to ensure the high quality. We thank the Members of the Local Organizing Committee, Publicity Chairs and Invited Sessions Chair. We acknowledge with gratitude the efforts of the KES Focus Group on Agent and Multi-Agent Systems for coordinating the organization of the Symposium. We extend cordial thanks to the KES Secretariat for the support with central administration and the registration process. Finally, we thank authors, presenters and delegates for their contribution to a successful event.

Thanks are also due to the many other experts who contributed to making the event a success.

We hope that KES-AMSTA2009 significantly contributed to fulfillment of the KES mission of academic excellence and led to even greater successes in the future.

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