



Call for Papers

CM-MAPS 2019

August 10th to 12th, in combination with IJCAI 2019 in Macao, China

<https://ijcai19.org/>

1st International Workshop on Conceptual Modeling for Multi-Agent Problem Solving

One of the initial aspects of artificial intelligence studied was problem-solving by autonomous systems. But it was quickly realized that many problems could not be solved by a single autonomous system, and in fact, a single system may not have a complete understanding of the complete problem being solved. Hence, with this as background, the area of cooperative problem solving, distributed artificial intelligence, and multi-agent systems as a comprehensive area have been established. The key point is that the original ideas of the problem are decomposed into sub-problems, agents (humans and/or systems) being assigned to work on sub-problems, and the need for cooperation among agents to solve the problem. And finally, establish a coordination framework to ensure that cooperation happens as intended, remain.

As AI is handling complex applications, like self-driving vehicles, to IoTs driven AI backed smart solutions, the core issues of the problem, sub-problems, cooperation, and coordination will surface, and become very relevant. In the implemented complex solutions, from IBM Watson's based systems to a conversational agent, the problem attempted to be solved is made up of multiple subproblems, and yet, the characterization of the subproblems and their interrelationship is not explicitly represented. The representation can be languages that glue the coordination among deployed sub-systems or higher level artifacts that convey the overall cooperation to solve the problem.

Conceptual modeling has constructs with a well-defined meaning, and an ontology to convey by language or visual diagram the concepts, their attributes, and interrelationships among the concepts. The area of knowledge representation also uses constructs to represent and model knowledge for comprehension and processing. The knowledge graphs are primitive knowledge representation techniques that do not capture the processing and enactment aspects of the problem being solved by a multi-agent system. Further, cooperative frameworks driven AI-based systems to provide new capabilities, discover extended relationships among constructs and solve the problems in a novel and creative way. Thus, new computing paradigms are required to address the key issues and challenges in modeling and development of new generation multi-agent systems.

The aim of the workshop is to bring the conceptual modelers, requirements specifiers, multi-agent language specifiers, formal process modelers, and cooperative problem solvers to get together and open this area of research to help the designers and solution providers of large AI systems to visualize, comprehend, discuss, evolve, and enact the AI system. Our proposed ideas from the workshop can help deploy, manage, monitor and control large AI systems, and work towards efficient and qualitatively better problem-solving multi-agent AI systems. These large AI systems can be orchestrated by the execution of tasks driven by events and coordinated by a workflow management system.

The key topics of interest for the workshop are:

- Conceptual artifacts to visualize and compose multi-agent problem solvers and their requirements
- Languages to specify and reason about high-level problem solving
- Cooperation frameworks among multiple agents to solve a problem
- Task allocation and quality and efficiency issues
- Workflow driven coordination to enact and deploy multi-agent problem solver
- Formalisms to bridge conceptual and formal models for decision and learning multi-agent AI systems
- Evolution and change management for multi-agent problem solving
- Agent Capability modeling
- Ontology modeling and specification for agent and problem solving

Submission Instructions:

Submitted papers must be formatted according to IJCAI guidelines (check https://www.ijcai.org/authors_kit). All contributions should be at most six (6) pages, five (5) pages maximum for content, and one (1) page for references.

Submissions should only be made electronically as PDF documents via paper submission site: <https://easychair.org/my/conference.cgi?conf=cmmaps2019>

Important Dates:

- Apr 12, 2019: Deadline for submission of contributions to the workshop
- May 10, 2019: Paper acceptance/rejection notification
- May 24, 2019: Deadline for camera-ready paper versions
- Aug 10-12, 2019: IJCAI 2019 Workshops

Contact Information:

All communication in relation to the workshop should be addressed via Mail to: cmmaps2019@gmail.com.

Organizing Committee:

- Kamal Karlapalem, IIIT Hyderabad, India
- P Radha Krishna, National Institute of Technology (NIT) Warangal, India
- Dominik Bork, University of Vienna, Austria

Program Committee (tentative):

- Robert Andrei Buchman, Babes Bolyai University Cluj Napoca, Romania,
- Yi CAI, South China Univ of Technology
- Peter Fettke, German Research Center for Artificial Intelligence (DFKI) and Saarland University, Germany
- Aurna Gerber, University of Pretoria, South Africa
- Knut Hinkelmann, FHNW Northwestern Switzerland, Switzerland
- Julio Cesar Leite, PUC de Rio de Janeiro, Rio de Janeiro, Brazil,
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