



INVITED SESSION SUMMARY

Title of Session:

Behavioural Mining for Agent and Multi-Agent Systems

Name, Title and Affiliation of Chair:

Assoc. Prof. Bruno Blaskovic, University of Zagreb, Croatia, (bruno.blaskovic@fer.hr)

Co-chair:

Assoc.Prof. Miljenko Mikuc, University of Zagreb, Croatia (miljenko.mikuc@fer.hr)

Details of Session (including aim and scope):

The goal of this organised session is to bring together researchers and industry in the areas of MAS design and process mining and to bridge the gap between academia, education, and industry.

On the one hand we have the discipline of business process mining, whose goal is to discover, analyse, and repair business processes.

The behaviour of agents or MAS can also be interpreted as a process. Each process consists of the sequence of events that describe the behaviour of the agent or MAS and are recorded in the logs.

By applying process mining or behaviour mining techniques to event log data, it is possible to discover behavioural process descriptions that can be used for further analysis (e.g. human-readable diagrams that provide deeper insight into process behaviour, performance analysis, verification, automated test generation, model checking, process repair ...).

There is a mutual connection between MAS behaviour and process mining:

- (1) mining MAS behaviour with process mining technology and
- (2) process mining with MAS, where business process mining algorithms are replaced by a methodology based on MAS.

Topics include, but are not limited to:

Mining agents and MAS behaviour

Model checking of MAS and agents

Automated test generation for MAS

Extending business process mining to MAS behaviour mining

Specification mining of MAS behaviour

Theoretical and practical aspects of agent and MAS synthesis

Formal methods and MAS behaviour (process algebras, Petri nets, finite discrete automata)

MAS behaviour and intelligent tutoring systems

Behavioural analysis for automated assessment in e-learning systems using formal concept analysis and combinatorial testing

MAS for testing automated assessment processes in e-learning systems

Analysis of student behaviour using behaviour mining techniques

Behaviour mining approaches based on machine learning and deep learning

Behaviour mining in the context of new trends and considerations in autonomous ship technology

Process mining algorithms

Unification of process mining and behaviour mining for MAS through common algorithms

Techniques and tools for process repair

Software-managed hybrid wireless networks in the enterprise environment

Use of formal methods for conformance checking and verification of results of process mining projects

Extending data mining technology with process behaviour

Success stories and case studies of MAS and process mining technologies

Main Contributing Researchers / Research Centres (tentative, if known at this stage):

Website URL of Call for Papers (if any):

Email & Contact Details:

Bruno Blaskovic
assoc.prof.,PhD
bruno.blaskovic@fer.hr
Faculty of Electrical Engineering and computing
University of Zagreb, Croatia

Miljenko Mikuc
assoc.prof.,PhD
miljenko.mikuc@fer.hr
Faculty of Electrical Engineering and computing
University of Zagreb, Croatia