

Simulation-driven DES-like Modeling and Performance Evaluation

Proposers:

*Chairman - Dr Krzysztof Bzdrya, Department of Electronics and Computer Science
Koszalin University of Technology, Poland, krzysztof.bzdrya@tu.koszalin.pl*

*Co-chairman - Prof. Grzegorz Bocewicz, Department of Electronics and Computer
Science Koszalin University of Technology, Poland, bocewicz@ie.tu.koszalin.pl*

Discrete Event System (DES) simulation techniques provide tools enable verification and validation of models of wide range of systems from manufacturing and material handling systems, through city traffic systems, till computer systems, and computer networks. The simulation techniques supported by different formal frameworks ranging from classical discrete event simulation to declarative and mathematical programming ones can be employed in the course of modeling and performance of different DES such as flexible manufacturing systems, parallel processing systems, railway traffic networks and so on.

The methods employed are usually based on mathematical programming techniques, such as linear programming or quadratic programming; other problems, however, cannot be modeled using these techniques. The most general solvers that are applicable to a wide range of machine learning and data mining problems embedded in DES simulation techniques s are now gathered in the area of *constraint programming*. The most general solvers that are applicable to a wide range of machine learning and data mining problems embedded in DES simulation techniques s are now gathered in the area of *constraint programming*. In constraint programming, the user specifies the model, that is, the set of constraints to be satisfied and constraint solvers generate solutions. This raises the questions as to whether it is possible to (semi)-automatically learn such constraints or their formulations from data and experience, and then how standard constraint-programming techniques can be used in data mining and machine learning.

In that context the session provides an excellent forum for scientists, researchers, engineers and industrial practitioners to meet and share experiences, theoretical knowledge or application examples based on the latest trends in different kinds of DES as well as future directions and trends in dealing with the growing demand for novel large-scale robust simulation-driven modeling frameworks. Authors are invited to submit full papers describing original research work associated with artificial intelligence solutions for DES-like modeling and performance evaluation related problems (arising in transportation, telecommunication, manufacturing and other kinds of DES) in areas including, but not limited to,

- network data models
- declarative modeling frameworks
- constraint programming for data mining
- constraint programming for machine learning
- connectivity maintenance
- multi-user, long transaction databases
- integrated data management for mobile services
- workflow and material flow planning in multimodal manufacturing systems
- itinerary planning in an urban public transport system
- intelligent transport and passenger route guidance systems
- evolutionary computation in optimization, scheduling and planning
- computer simulation modeling frameworks.