

7th EUROSIM Congress on Modelling and Simulation
September 6 – 10, 2010
Prague, Czech Republic

www.eurosim2010.org, www.asim-gi.org



Call ASIM Special Session

Advanced and Comparative Approaches in Modelling and Simulation

Thursday, September 9, 2010 – Friday, September 10, 2010

'We report in this article on a variety of modelling techniques and associated tools, in addition to the traditional approach based on ordinary differential equations (ODEs), which provide a range of descriptive and analytical powers. As the field matures, we expect a wider uptake of these advanced and alternative approaches for several reasons, and a comparison with classical techniques

Sentences like the above cited introduce abstracts of publication on modelling and simulation, indicating that advanced alternative modelling techniques have become a big need.

The EUROSIM 2010 Special Session 'Advanced and Comparative Approaches in Modelling and Simulation' addresses any kind of advanced approaches and comparative approaches, within a specific application/project, within an application area, or by means of general comparisons and benchmarking.

In the following a (incomplete) list of modelling methods is given, where the session should discuss advanced approaches and developments within a method or by combining methods:

- Classical ODE and DAE modelling
- PDE Modelling (and different algorithms for solving, e.g. FEM, ...)
- Cellular Automata
- DEVS Systems
- Queuing Models
- Agent-based models
- Markov Chains
- Neural Nets
- Fuzzy Systems, etc.

In the following modelling paradigms are sketched, worth to be supported by advanced approaches and worth to be compared and benchmarked:

- Also in modelling OO approaches give better insight into structures - it makes sense to compare classical and OO approaches.
- Hybrid approaches become more and more important – it makes sense to compare these approaches, from total hybrid decoupling of models until complete overall models.
- Symbolic computation is an alternative to analysis in the time domain - it makes sense, to include Symbolic Computation Methods for model analysis (or for model approximation)
- For modelling and simulation of discrete processes, not only classical discrete simulation systems, based on DEVS, can be used - it makes sense to look also for different modelling approaches analysed by different algorithms, like Petri nets, Markov chains, and Queuing Theory applied on approximating models, or advanced DEVs, etc
- The classic basis of continuous modelling and simulation was analysis and simulation in the time domain, and spatial dynamics was shifted to the world of finite differences, finite volume, and finite elements - it makes sense to study the different approaches for incorporating spatial behaviour into time domain analysis
- Events are handled more or less sensitive in modelling approaches – especially state events cause up to now problems which might be overcome by advanced methods

And last but not least we invite to contribute to this special session by articles on benchmarks and comparisons in modelling and simulation, which in principle are organised summaries of the modelling approaches given above.

Organisation of the Session.

Contributors are invited to submit a contribution with extended abstract (2 pages, pdf format) by email to one of the session organisers or directly or via ASIM webserver in time, at latest May 3, 2010). Session organisers will take care on proper peer review and will send notification of acceptance until May 15, 2010.

For Publication and presentation the following options are available:

- Printed Proceedings Abstract, Full Paper at Proceedings CD, Oral Presentation
- Printed Proceedings Abstract, Short Paper at Proceedings CD, Oral Presentation
- Printed Proceedings Abstract, Oral Presentation
- Only Oral Presentation

The oral presentation of the Special Sessions organised by ASIM, 'Advanced and Comparative Approaches in Modelling and Simulation' and 'Physical Modelling, Control and Model Exchange' are scheduled for Thursday, September 9, 2010, 10.00 – 17.00, and Friday, September 10, 2010, 9.00 – 13.00.

Final versions of the accepted contributions with publication in Proceedings have to follow the submission guidelines and formatting guidelines (see EUROSIM 2010 homepage www.eurosim2010.org), upload until June 15, 2010.

Session organizers / Submission:

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Submission also directly via ASIM webserver www.asim-gi.org, quick link EUROSIM 2010

Summary

Advanced and Comparative Approaches in Modelling and Simulation

Chairs: Thorsten Pawletta, Christina Deatcu, Univ. Applied Sciences Wismar;
Felix Breitenecker, Vienna University of Technology,
Nikolas Popper, DWH Simulation Services Vienna,
Peter Schwarz, Fraunhofer Dresden

Abstract: As the field of modelling and simulation matures, a wider uptake of advanced and alternative approaches for modelling and simulation and a comparison with classical techniques have become a big need. The EUROSIM 2010 Special Session **Advanced and Comparative Approaches in Modelling and Simulation** addresses any kind of advanced approaches and comparative approaches, within a specific application/project, within an application area, or by means of general comparisons and benchmarking.

In the following a (incomplete) list of modelling methods is given, whereby this session should discuss advanced approaches and developments within a method or by combining methods: Classical ODE and DAE modelling, PDE Modelling (and different algorithms for solving, e.g. FEM), Cellular Automata, DEVS Systems, Queuing Models, Agent-based models, Markov Chains, Neural Nets, Fuzzy Systems, etc. Details see pdf Call.

Session Deadline: May 3, 2010 – submission of 2-page pdf extended abstract via email to one of the sessions organisers or directly at ASIM webserver www.asim-gi.org (quick link EUROSIM 2010)

Notification of Acceptance: May 15, 2010

Camera Ready Papers: June 15, 2010

Submission guidelines: Please send a 2-page extended abstract (pdf) via email to one of the session organisers (no special formatting guidelines) or submit directly or at ASIM webserver: thorsten.pawletta@hs-wismar.de, christina.deatcu@hs-wismar.de, felix.breitenecker@tuwien.ac.at, niki.popper@drahtwarenhandlung.at, pb.schwarz@web.de; www.asim-gi.org – quick link 'EUROSIM 2010 submission'

Review process: Each contribution will be reviewed by at least two reviewers.