

Conference program SIMS2003 :

September 18-19, 2003 Conference SIMS 2003 at Malardalen University, Vasteras (close to city center)

Thursday September 18

08.30- 09.30 Registration, coffee outside Hall Omega

Hall Omega

09.30-09.45 Welcome speech, Opening of conference (Peter Fritzon, Chairman of SIMS)

Key note speeches:

09.45- 10.30 ABB's research activities in the automation field by Dr. Charlotte Brogren, research director ABB Corporate Research, Vasteras, Sweden

10.30- 11.15 Neural Networks in System Identification and Forecasting Principles, Techniques, Applications by Dr. Hans Georg Zimmerman, Senior Principal Research Scientist Siemens AG, Corporate Technology, Munich

11.15-12.00 Graphical languages for decision support systems by Professor Finn Jensen, Aalborg University, Denmark

12-12.30 Discussion on "the use of simulation and modeling in the future" (discussion leader Erik Dahlquist)

12.30- 13.30 Lunch

Sessions 13.30- 17.30 Session 1a in Hall "Delta", Session 2a in Hall "Pi"

15- 15.30 Coffee break

**Session 1a : Simulation systems and general methods (7st).
Chairman: Peter Fritzon**

13.30 Automatic Dimensional Consistency Checking for Simulation Specifications
Mikael Sandberg , Daniel Persson, Bjorn Lisper , Malardalen University, Computer science department, Sweden

14.00 Rag Doll Physics

A. Lombardi, M. Hennix, P. Hugoson, G. Johansson, T. Miljevic, A. Nilsson, M. Wassborn, Linköping University, Sweden

14.30 Dr Modelica

Susanna Monemar, Eva-Lena Lengquist Sandelin, Peter Fritzson, Peter Bunus PELAB, Department of Computer and Information Science, Linköping Univ., Sweden

15.00 – 15.30 Coffe break

15.30 Enhancing distributed simulation systems by using modern technologies

Andreas Kvarnström, Baharak G. Fard, Jari Ala-Kurikka, Ivica Crnkovic , Computer science dep., Mälardalen University, Sweden

16.00 Applications of Object-oriented Bayesian Networks for Causal Analysis of Process Disturbances

Galia Weidl, Institute of Industrial Manufacturing and Management, University of Stuttgart, Germany , Anders.L.Madsen, Hugin Expert A/S, Denmark, Erik.Dahlquist, Mälardalen University, Sweden

16.30 Modelling concurrent activities and resource sharing in modelica

Håkan Lundvall, Peter Fritzson Dept. of Computer and Information Science, Linköping University

17.00 Developing simulation models for dynamic optimization

Petteri Pulkkinen, Heimo Ihalainen, Risto Ritala, Institute of Measurement and Information Technology, Tampere University of Technology

Session 2a : Non-process industry type of Applications (6st)

Chairman: Ivica Crnkovic

13.30 Improved voltage sag ride-through for line-connected synchronous machines

Kai Pietilainen, Magnus Jansson and Lennart Harnefors, Electronics dept., Malardalen Univ, Sweden

14.00 Short term scheduling in electronics manufacturing using discrete event simulation

Sébastien Gebus, Alexandre Soulas and Esko Juuso, Control Engineering Laboratory, Univ of Oulo, Finland

14.30 Discontinuous simulation techniques for worm drive mechanical system dynamics

Rostyslav Stolyarchuk , State Scientific and Research Institute of Information Infrastructure , National Academy of Sciences of Ukraine

15.00- 15.30 Coffee break

15.30 SMIB- a pilot program system for stochastic simulation in insurance business

Dimitrii Silvestrov and Anatoliy Malyarenko, Dep of Mathematics, Malardalen University, Sweden

16.00 Generation of Random Atmosphere with Application to Statistical Flight Simulation

J. Roshanian , Dep of Mechanics, KNT University of Technology, Tehran ,IRAN

16.30 Risk modelling ;definitions and methods of riskmodelling in relation to shipping in lake Malaren

Henrik Jacobson, Mälardalens University, Dep of Public Technology , Sweden

18.30 Dinner on a ship at lake Malaren

Friday September 19:

Sessions 09.00 – 12.30

Coffe break 10.30- 11.00

Lunch 12.30- 13.30. (Meeting for the board of SIMS during the lunch)

13.30-15.00 Continuing sessions

Session 1b: Industrial Applications, Pulp and paper, oil and gas, waste water treatment and metallurgical industry (9 st).

Chairman: Jafar Mahmoudi

09.00 Framework for a control strategy of in-mill biological treatment using on-line sensors and dynamic modeling.

Tomas Alexandersson, Christian Rosen and Ulf Jeppsson. Department of Industrial Electrical Engineering and Automation, Lund University, Sweden

09.30 Copper Heat Sink Design

Jafar Mahmoudi, Outokumpu, Vasteras, Sweden

10.00 Modelling of gas-solid fluid dynamics and pyrolysis, in a biomass-fired municipal CFB boiler

Ulf Sand*, Jan Sandberg*, Rebei Bel Fdhila**, Department of Public Technology, Fluid Dynamics Research Group,* Mälardalen University, Västerås, Sweden, ** ABB Corporate Research,

10.30- 11.00 Coffee break

11.00 A combined physical and statistical simulation model for Black liquor gasification

Erik Dahlquist, Malardalen University, Dep of Public Technology, Sweden

11.30 Intelligent dynamic simulation of batch cooking

Esko Juuso, Control Engineering Laboratory, University of Oulu , Finland

12.00 Light propagation in pulp and paper research

Torbjørn Smørgrav , Heidi Brunborg_, Torbjørn Smørgrav†, Richard Blake‡, Per Nygard§, Department of computer and information science , NTNU, IME , Norway

12.30- 13.30 Lunch

13.30 Gas Pipes with Gas Mixtures

Bernt Lie, Telemark University College, Porsgrunn, Norway

14.00 Synthesis and optimization of a methanol process

Jeppe Grue, Aalborg Universitet, Institute of Energy Technology, Denmark

14.30 Transient simulation of refrigerated sea water system

*J.A.Thorsteinsson^{a&b}, P. Jensson^a, T.Condra^b, P.Valdimarsson^a

^a University of Iceland,Department of Mechanical and Industrial Engineering Reykjavik,Iceland, ^b Aalborg University,Institute of Energy Technology, Denmark

Session 2b: Applications in Energy Engineering (9 st)

Chairman: Rebei Bel Fhdila

09.00 Robustness of component models in energy system simulators

Brian Elmegaard , Department of Mechanical Engineering, Technical University of Denmark, Lyngby, Denmark

09.30 Evaluation of Prosim and IPSEPro, two heat and mass balance based simulation softwares

Daniel Häggståhl, Erik Dahlquist, Mälardalen University, Department of Public Technology,Process Optimization and Diagnostic Laboratory, Sweden

10.00 Mechanical CAD with Multibody Dynamic Analysis Based on Modelica Simulation

Vadim Engelson, Peter Bunus, Lucian Popescu, Peter Fritzson, PELAB, Linköping University

10.30 – 11.00 Coffe break

11.00 Simulation of volatile gas release from a small dry wood particle undergoing pyrolysis in a hot convective flow field

Ulf Sand*, Jan Sandberg*, Rebei Bel Fdhila**, * Department of Public Technology, Fluid Dynamics Research Group, Mälardalen University, Sweden

11.30 Modelling losses within combustion chamber of diesel engines.

Mohammad Nikian, , and S.K.Arya, of Mech. Eng., Univ. of Urmia, Urmia, Iran

12.00 Non-Thermal plasma treatment of automotive exhaust gases

M.Rezaei, A.Taeb, N.Habibi, Department of Chemical Engineering, Iran, University Of Science and Thechnology, Tehran, Iran

12.30 – 13.30 Lunch

13.30 Modelling and simulating retube boiler performance

Kim Sørensen Aalborg University, Institute of Energy Technology, Claus M. S. Karstensen, Aalborg Industries A/S, Thomas Condra, Aalborg University, Niels Houbak, Technical University of Denmark, MEK, Lyngby, Denmark.

14.00 Modelling simulation and optimization of boiler heating surfaces and evaporator circuits

Kim Sørensen, Aalborg University, Institute of Energy Technology and Aalborg Industries A/S, Thomas Condra, Aalborg University, Institute of Energy Technology, Niels Houbak, Technical University of Denmark, MEK, Lyngby, Denmark

14.30 Exploiting dual conditions in economic dispatch of district heating systems

Erik Dotzauer, Fortum heat, Stockholm, Sweden

15.00 Conclusions and Closing remarks. Peter Fritzson and Erik Dahlquist

Spare talks, no oral presentation at the conference :

Study vapour compression refrigeration and compare the performance of working refrigerants.

M. Naghashzagan, Dept. of Mech Eng, Univ. of Guilan, Rasht, Iran

Studying of the capability of the cermet tools during turning of steels

Tareq A. Abu Shreehah, Department of Mechanical Engineering, Al-Balqa' Applied University, Tafila Applied University College, Jordan

In connection to the conference there will be a course on ANN September 15-17 :

“Identification and Forecasting of Dynamical Systems by Neural Networks Principles Techniques, Applications”

Monday 15 Sep 9 – 16 Malardalen Univ, Vasteras room S3-902

Tuesday 16 Sep 9 – 16 Malardalen Univ, Vasteras room R1-218

Wednesday 17 Sep 9 – 15 Malardalen Univ, Vasteras room S3-908

Lecturer:

Dr. Hans Georg Zimmermann
Senior Principal Research Scientist
Siemens AG, Corporate Technology, Munich

Course content:

- 0 Introduction to Neural Networks
- 1 Neural Algorithms: More than the Numerics of Gradient Computation
- 2 Feedforward Neural Networks: More than Function Approximation
- 3 Model Building: More than Learning from Data
- 4 Neuro - Fuzzy: More than Neuro & Fuzzy
- 5 Recurrent Neural Networks: More than Algorithms
- 6 Open Systems: More than a Superposition of Internal & External Dynamics
- 7 Error Correction Neural Networks: More than Autoregressive Modeling
- 8 Variance-Invariance Separation: More than Dimensionality Reduction
- 9 Unfolding in Space and Time: More than Unfolding in Time
- 10 Time in Time Series Analysis: More than Data Time
- 11 Stochastic Modeling: More than Deterministic Forecasting
- 12 Causal-Retro-Causal Networks: More than Causal Networks
- 13 Online Learning: More than Plasticity versus Stability
- 14 Large Networks: More than Increasing Dimensionality
- 15 Decision Support Systems: More than Forecasting
- 16 Multi-Agent Market Modeling: More than Econometrics