

Workshop Program NMPC-SOFAP 2007

Workshop on Nonlinear Model Based Control - Software and Applications (NMPC-SOFAP, 2007), April 19-20, 2007, Loughborough, United Kingdom

Time Thursday (April 19)

08:40 AM	Registration
09:20 AM	Keynote lecture (chair: Z. Nagy) Industrial application of predictive functional control J. Richalet, founder of ADERSA, France; H. Luft, Degussa AG, Germany
10:00 AM	Keynote lecture (chair: M. Diehl) Applications of NMPC to industrial batch processes T. S. Schei, Cybernetica AS, Norway
10:40 AM	Coffee break
	Session 1 – Theory and computational aspects (chair: J. Morris)
11:00 AM	A Global approach to feasibility and extensions for non linear processes A. Rossiter, L. Shead, University of Sheffield, UK
11:20 AM	Non-linear non-square operability for MPC L. Shead, A. Rossiter, University of Sheffield, UK
11:40 AM	Fast implementation of MPC using Set Membership approximation methodologies M. Canale, L. Fagiano, M. Milanese, Polytechnical University of Torino, Italy
12:00 PM	Lunch
01:20 PM	Keynote lecture (chair: Z. Nagy) Why is it worth thinking about “robust” in “robust model predictive control” E. Kerrigan, Imperial College London, UK
01:40 PM	
	Session 2 – NMPC in chemical engineering I (chair: A. Rossiter)
02:00 PM	Nonlinear predictive control of E. Coli cultures G. Hafidi, S. Tebbani, D. Dumur – Supélec, Gif-sur-Yvette, France A. Vande Wouwer – Faculté Polytechnique de Mons, Belgium
02:20 PM	An NMPC strategy for conversion targeting in a FCC pilot plant – Development and online implementation G. Bollas, I. Anastasiou, C. Ziogou, S. Voutetakis, P. Seferlis – CPERI, Thessaloniki, Greece S. Papadopoulou – ATEI, Thessaloniki, Greece
02:40 AM	Batch reactor swelling constrained level control L. Simon, M. Introvigne, U. Fischer, K. Hungerbühler – ETH Zürich, Switzerland
03:00 PM	An ultimate NMPC solution to the Tennessee Eastman Benchmark Problem? P. Kühn, T. Kraus – IWR, University of Heidelberg, Germany M. Diehl – OPTEC, KU Leuven, Belgium
03:20 PM	Coffee break
	Session 3 – Software and implementations (chair: W. Van Brempt)
04:00 PM	A software solution for adaptive control vector parameterization for NMPC A. Hartwich, K. Stockmann, W. Marquardt – RWTH Aachen University, Germany
04:20 PM	MUSCOD-II and the Nonlinear Model Predictive Control Toolkit in a Nutshell M. Diehl – OPTEC, KU Leuven, Belgium
04:40 PM	OASES: Open-Source Implementation of the Online Active Set Strategy for Fast MPC J. Ferreau – OPTEC, KU Leuven, Belgium
05:00 PM	An open source and free software NMPC framework P. Oliveira, A. Romanenko, J. Leal – Ciengis, Portugal
05:20 PM	Software demonstrations
07:00 PM	Dinner starts...

Time Friday (April 20)

08:40 AM	Keynote lecture (chair: P. Kühn) Sensitivity-based NMPC with delayed optimization V. Zavala, L. Biegler – Carnegie Mellon University, Pittsburgh, USA
	Session 4 – Industrial applications (chair: T. Schei)
09:20 AM	Model-based Control & Diagnostics for Automotive Catalytic Emission Control Systems K. Muske, J. Peyton Jones, Villanova University, USA
09:40 AM	Model predictive control for boiler start-up (BoilerMax) R. Franke, K. Krüger, M. Rode, G. Sand – ABB AG, Germany
10:00 AM	Applications and application aspects of NMPC - From simulation to industrial implementation via OptCon Z. Nagy – Loughborough University, UK
10:20 AM	Challenges for the APC community: serving the unserved audience W. Van Brempt, IPCOS, Belgium
10:40 AM	Coffee break
11:00 AM	Round table discussion “NMPC technology requirements in the process industry” lead by Decoster/Kadam (ExxonMobil)
12:00 PM	Lunch
01:20 PM	Keynote lecture (chair: M. Diehl) NMPC over networks with guaranteed stability R. Findeisen – University of Stuttgart
	Session 5 – NMPC in chemical engineering II (chair: L. Biegler)
02:00 PM	MPC Applications in Discontinuous Polymerization Systems D. Silva, N. Oliveira – University of Coimbra, Portugal
02:20 PM	Nonlinear model predictive start-up control of a plate reactor J. Jørgensen, S. Haugwitz
02:40 AM	Efficient Moving Horizon State and Param. Estimation of Simulated Moving Bed Processes A. Küpper, S. Engell – University of Dortmund, Germany
03:00 PM	Towards Model Based process Performance monitoring J. Morris – Newcastle University, UK
03:20 PM	Coffee break
	Session 6 – Non-standard applications (chair: K. Muske)
04:00 PM	NMPC of glucose concentration in subjects with type 1 diabetes L. Magni, D. Raimondo, G. De Nicolao – University of Pavia, Italy C. Dalla Man, C. Cobelli – University of Padova, Italy; B. Kovatchev – University of Virginia USA
04:20 PM	Model Predictive Control of a Manipulator Robot for Conveyor Tracking M. Guilbert, P.-B. Wieber - INRIA Rhone Alpes, France
04:40 PM	Relevance of MPC for Diesel engine control P. Ortner – University of Linz, Austria
05:00 PM	Coffee break
	Session 7 – New methodologies (chair: R. Findeisen)
05:20 PM	Robust NMPC based on parameterized feedback B. Houska, A. Ilzhöfer – IWR, University of Heidelberg, Germany
05:40 PM	Automatic Differentiation based NMPC of Satellites using magneto-torquers Y. Cao – Cranfield University, UK; W.-H. Chen – Loughborough University, UK
06:00 PM	Wrap-up by the organizers – End of the workshop