



Professor Frank Allgöwer Universität Stuttgart

Industry 4.0: Challenges and Opportunities for Model Predictive Control

In the Chair: Professor Claire S. Adjiman, Centre for Process Systems Engineering, Imperial College London

Vote of Thanks: Dr Benoît Chachuat, Centre for Process Systems Engineering, Imperial College London

Abstract: With the vision of the smart factory of the future, generally termed Industry 4.0, the process industries are currently undergoing a fundamental new orientation on the basis of the Cyber-Physical Systems and Internet of Things and Services paradigms. In the future all parts along the production chain will be equipped with embedded computing, communication and networking capabilities and are expected to interact in an optimal way towards the goal of a quality oriented, energy and resource efficient, save and reliable production process. Through decentralized optimal decision-making and an appropriate communication among the networked individual parts, the whole production process of the future is expected to operate optimally. In this presentation the challenges and opportunities of Industry 4.0 for the field of process control are discussed. We will in particular investigate the potential impact of Model Predictive Control (MPC) for the fourth industrial revolution and will argue that some new developments in MPC, especially connected to distributed and economic model predictive control, appear to be ideally suited to have a potential impact in the new Industry 4.0 environment.

Biography: Professor Frank Allgöwer is director of the Institute for Systems Theory and Automatic Control at the University of Stuttgart in Germany. Professor Allgöwer's main interests in research and teaching are in the area of systems and control with a current emphasis on the development of new methods for optimisation-based control, networks of systems and systems biology. Professor Allgöwer received several recognitions for his work including the IFAC Outstanding Service Award, the IEEE CSS Distinguished Member Award, the State Teaching Award of the German state of Baden-Württemberg, and the Leibniz Prize of the Deutsche Forschungsgemeinschaft. Professor Allgöwer served as Vice-President for Technical Activities for the IEEE Control Systems Society and is President of the International Federation of Automatic Control (IFAC) for the years 2017-2020. He was Editor for the journal Automatica from 2001 to 2015 and is editor for the Springer Lecture Notes in Control and Information Science book series and has published over 500 scientific articles. Since 2012 Professor Allgöwer serves as Vice-President of Germany's largest funding agency for fundamental research, the German Research Foundation (DFG).

Thursday 7 December 2017 • 17:30

Lecture Theatre 3 (Room 333), Department of Chemical Engineering, Roderic Hill Building,
South Kensington Campus, Imperial College London SW7 2AZ
Tea and coffee will be served before the lecture from 16:30 in the Common Room (Room 228)
Department of Chemical Engineering, Level 2, ACE Extension Building

The Twenty Fourth Professor Roger W.H. Sargent Lecture



The Professor Roger Sargent Lecture is an annual event the Centre for Process Systems Engineering inaugurated as a tribute to Professor Sargent's vision, leadership, significant technical contributions and to his legacy in the field of Process Systems Engineering.



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