AUTOMATION & CONTROL INSTITUTE
INSTITUT FÜR AUTOMATISIERUNGS- & REGELUNGSTECHNIK

TECHNISCHE UNIVERSITÄT WIEN
Vienna University of Technology

Einladung zum Vortrag

DATA DRIVEN MODELING FOR DIAGNOSTICS AND MODEL BASED SENSORLESS ADAPTIVE OPTICS

von

Prof.Dr.ir. Michel VERHAEGEN

Delft Center for Systems and Control
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ORT: Hörsaal EI 9, Gußhausstraße 27-29, Erdgeschoß, Stiege 1

ABSTRACT

A crucial part in the derivation of high performance model based controllers or detection filters is the acquisition of the model. An alternative or complementary approach to the derivation of such a model based on first principles is the use of system identification. A main challenge in the use of system identification for model based control/diagnostics is that the user choices should be limited, can reliably be made and make the robust control design "easy". In the presentation, two data driven synthesis procedure will be presented and discussed.
First, the data driven design of a robust fault detection filter. Here the choice of a model linear in the parameters for both the identification part and detection filter part is crucial in achieving the design challenges. In addition to this generic illustration of the advantages of a data driven approach, a more specific case study is presented to design a model based controller for sensorless adaptive optics. Here the model based approach allows in addition to a more user friendly design to also improve the performance compared to the non-model based approaches.

BIOGRAPHICAL INFORMATION

Michel Verhaegen is full professor at Delft University of Technology. Up to 2003 his control group was allocated in the faculty of Electrical Engineering, and since 2003 Prof. Verhaegen´s group is part of the Delft Center for Systems and control, which was formed by merging the systems and control groups of Electrical Engineering (EWI), Mechanical Engineering (3mE), and Applied Physics (TNW).

Prof. Verhaegen´s main fields of research is the design of Algorithms for solving System and Control problems. Areas of current attention are System Identification, Modeling, Signal Processing and Multi-criteria Optimization. Application areas of interest include Aerospace, Process Control and Biomedical Engineering.

WEITERE INFORMATIONEN

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