Presented as late breaking results contribution
21st IFAC World Congress (Virtual)
Berlin, Germany, July 12-17, 2020

Towards Model Order Selection for Robust-Control-Relevant System Identification

Paul Tacx * **Robin de Rozario** * **Tom Oomen** *

* *Eindhoven University of Technology, Control Systems Technology group, Eindhoven, the Netherlands, (e-mail: p.j.m.m.tacx@tue.nl).*

Abstract: Robust control allows for guaranteed performance for a range of candidate models. The aim of this paper is to investigate the role of model complexity in the identification of model sets for robust control. A key observation is that model accuracy and model complexity should depend on the control goal. Regularization using a worst-case control criterion in conjunction with a specific model uncertainty structure allows robust control of multivariable systems. Simulations confirm that the model order depends on the control objectives. Overall, the framework enables systematic identification of model sets for robust control.

Keywords: Identification for control, Robust control, Motion control, Mechatronic systems, Frequency domain identification, Identification and control methods, Order selection

⋆ This work is part of the research programme VIDI with project number 15698, which is (partly) financed by the Netherlands Organisation for Scientific Research (NWO).