Robust Model Predictive Control of Uncertain Linear Systems with Persistent Disturbances and Input Constraints

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Abstract

This report presents computationally attractive robust model predictive control approaches for the control of discrete-time linear systems with input constraints, structured parameter uncertainties and persistent disturbances. In order to ensure robust stability of constrained uncertain systems, constructive methods are proposed to compute robust positively invariant sets for stabilizing predictive controller. The proposed robust predictive control (RMPC) systems satisfy both recursive feasibility and input-to-state stability. In the controller design, the 0-step predictive controller with a simple structure is proposed. In order to deal with the RMPC problem with a fixed terminal set, the result is extended to the N-step predictive controller. Simulations results have demonstrated the efficacy of the proposed predictive control approaches.
About the Speaker

Weilin Yang received the Bachelor’s degree in precise machinery & instrument from University of Science and Technology of China, Hefei, China. He is currently a PhD student in the Department of Mechanical and Biomedical Engineering, City University of Hong Kong. His current research interests include robust model predictive control, modelling and control of energy systems.

All are welcome!
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