

Nash-Optimisation Enhanced Distributed Model Predictive Control

Shao-Yuan Li¹, Xiao-Ning Du¹ and Quan-Min Zhu²

¹*Institute of Automation, Shanghai Jiao Tong University, 1954 Hua Shan Road,
Shanghai 200030, P.R.China*

²*Faculty of CEMS, University of the West of England, Coldharbour Lane,
Bristol, BS16 1QY, UK*

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Abstract: This study presents an efficient distributed model predictive control scheme based on Nash optimality, in which the on-line optimisation of the whole system is decomposed into that of several small co-operative agents in distributed structures, thus it can significantly reduce computational complexity in model predictive control of large-scale systems. The relevant nominal stability and the performance on single-step horizon under the communication disturbance are investigated. A three input and three output linear model is simulated to test the effectiveness of the proposed control algorithm.

Keywords: *Model predictive control (MPC); distributed control system; Nash optimality; multi-agents.*

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