

Systems and Control Seminar

Wednesday, 17.07.2019, 12:00 h, room A 247

Communication Reduction in Distributed Systems

Tobias Sprodowski (University of Bremen)

Abstract

In this presentation, we will introduce an approach of reducing the communication load in a Distributed Model Predictive Control Scheme (DMPC) for mobile robots. Each robot is equipped with a local controller to solve an Optimal Control Problem (OCP) online with regard to track an individual goal. The optimisation is carried out non-cooperatively in a serial order and the obtained trajectories are communicated to ensure collision avoidance constraints. The key idea is to discretise the communication while conducting the optimisation still in continuous space. We simulate this proposed model and show further reduction possibilities motivated by the interval superposition principle and differential communication techniques stemmed from a computer science background.

Biographical information

Tobias Sprodowski is a research associate at the University of Bremen in the group Dynamics in Logistics since 2014. In his research, he is working with distributed systems concerning stability and feasibility aspects with minimised communication. The applications concern autonomous connected vehicles and robots and distributed production systems. Tobias Sprodowski studied Computer Science at the Leibniz University of Hannover from 2004 to 2011, with emphasis in discrete and distributed simulation and system architecture. He also worked as a full-time software developer at a company which develops applications for people for filing tax returns.