Fault-Tolerant Model Predictive Control of Hybrid Systems

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Abstract

This paper focuses on model predictive control (MPC) problem with fault-tolerance capabilities is formulated within the hybrid systems framework. In particular Mixed Logical Dynamical (MLD) approach is considered. It allows to model the hybrid systems involved continuous, discrete dynamics and constraints. The changes or the switches which may appear over such dynamics are modeled by using the auxiliary variables taking into account the interconnections. In this work, we proposed a reconfiguration control approach based on Model Predictive Control (MPC) framework. A fault MLD model is also proposed. The main contribution of this paper consists in the investigation of a new method for fault tolerant control used the MLD model. The proposed formulation is illustrated by considering a two tank system benchmark.

References

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Index Terms

Computer Science  Control Systems

Keywords

Hybrid System  Mld  Control Reconfiguration  Actuators Faults  Mldf  Mpc