Fault-Tolerant Model Predictive Control of Hybrid Systems

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

2004.
- A. Bemporad. Hybrid Toolbox for real time applications, User Guide, July 2010

Index Terms

Computer Science
Control Systems

Keywords
Hybrid System Mld Control Reconfiguration Actuators Faults Mldf Mpc