

# Development of a Fault Tolerant Control System

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**Abstract:** Fault Tolerant Control (FTC) is the combination of fault detection and controller reconfiguration. The design of an FTC system is aimed to detect faults quickly and minimize the impact of faults to the system. This paper proposes a fast and reliable system for fault detection and diagnosis (FDD) and controller reconfiguration (CR). Systems subject to such faults are modelled as stochastic hybrid systems. Each fault is deterministically represented by a mode in a discrete model set. The FDD is used with interacting multiple-model (IMM) estimator and CR is used with generalized predictive control (GPC) algorithm. Simulations for FDD, CR and FTC system are illustrated and analyzed.

Keywords: Fault Tolerant Control, Fault Detection and Diagnosis, Controller Reconfiguration, Interacting Multiple-Model, Generalized Predictive Control.

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