

Nonlinear Quadrotor Control with Online Model Identification

This paper proposes a new Fault Tolerant Control (FTC) system for quadrotors which are subjected to actuator loss of effectiveness faults. The proposed FTC system is composed of three subsystems: the state estimation, the loss of effectiveness estimation and the BS controller. A new method to estimate the loss of effectiveness online is proposed, which can provide fault information for the controller to achieve fault tolerant control. The performance of the FTC system is validated using two different simulations: position control of the quadrotor with and without actuator faults. The simulation results show that the proposed system can recover the control even all the four rotors fail consecutively, which demonstrate its satisfactory performance.