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Fault-Tolerant Fuzzy Gain-Adaptive PID Control for a 2 DOF Helicopter, TRMS System

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Abstract : In this paper, a Fault-Tolerant control of 2 DOF Helicopter (TRMS System) Based on Fuzzy Gain-Adaptive PID is presented. In particular, the introduction part of the paper presents a Fault-Tolerant Control (FTC), the first part of this paper presents a description of the mathematical model of TRMS, an adaptive PID controller is proposed for fault-tolerant control of a TRMS helicopter system in the presence of actuator faults, A fuzzy inference scheme is used to tune in real-time the controller gains, The proposed adaptive PID controller is compared with the conventional PID. The obtained results show the effectiveness of the proposed method.

Keywords : fuzzy control, gain-adaptive PID, helicopter model, PID control, TRMS system
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