

Design of Automatic Flight Control System for general Aviation with a Fuzzy System and Enhancement Controller

Abstract

In recent years there is an advance development in aviation, so this demands an improvement and development of automatic flight control system. The autopilot is an important component within the flight control system. There is a growing demand for robust controllers, which have the potential to be effective and applicable to more complex systems. This paper present design and simulating of a pitch controller based on design an autopilot that controls the pitch of Learjet C-21 aircraft using standard equation of motion. Four different controllers considered, First proportional -integral -derivative controller (PID) only, Fuzzy proportional derivative controller (PD),Fuzzy proportional integral (PI) and Fuzzy PID controller have been discussed for different conditions of Mach number, angle of attack, true airspeed and weight. Finally, the comparison of the performance of the controllers described previously is presented.

Keywords: Pitch control, automatic flight control, PID, fuzzy logic.