



ON THE USE OF SOFT COMPUTING TECHNIQUES FOR HELICOPTER CONTROL IN ENVIRONMENT PROTECTION MISSION SCENARIOS

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ABSTRACT—This paper presents some results related to fuzzy control from the research on autonomous helicopter control conducted in the framework of the COMETS project. Soft-computing techniques have been applied to improve performance of the Multi-Loop PID model based helicopter controller without increasing significantly the computational requirements. Thus, the resulting control system can be implemented by using a simple on-board fixed point microcontroller. Moreover, fuzzy logic has been also used for testing the helicopter model by inducing nonlinear behaviors (including multiple stable and unstable equilibriums and limit cycles). Experimental results with MARVIN helicopter illustrate the methods (on-line videos are available).

Key Words: Soft computing, fuzzy control, autonomous helicopter control, modeling, nonlinear control, model validation.