

# **APPLICATION OF SELF-TUNING FUZZY PID CONTROLLER ON INDUSTRIAL HYDRAULIC ACTUATOR USING SYSTEM IDENTIFICATION APPROACH**

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**Abstract-** In this paper, Self Tuning Fuzzy PID controller is developed to improve the performance of the electro-hydraulic actuator. The controller is designed based on the mathematical model of the system which is estimated by using System Identification technique. The model is performed in linear discrete model to obtain a discrete transfer function for the system. Model estimation procedures are done by using System Identification Toolbox in Matlab. Data for model estimation is taken from an experimental works. Fuzzy logic is used to tune each parameter of PID controller. Through simulation in Matlab by selecting appropriate fuzzy rules are designed to tune the parameters  $K_p$ ,  $K_i$  and  $K_d$  of the PID controller, the performance of the hydraulic system has improved significantly compare to conventional PID controller.

**Index terms:** Identification, Hydraulic Actuator, Position Control, Self-Tuning, Fuzzy PID