Thesis Title   Design of Fuzzy Controller Based on Nonlinear Circuit

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ABSTRACT

This thesis presents the design of fuzzy controller based on nonlinear circuit. The design of controller uses fuzzy set and fuzzy logic theory to design fuzzy controller. The controller contains 3 parts; Fuzzification, Inference and Defuzzification. The slope of nonlinear circuit used for fuzzification is adjustable.   The circuit also combine to the current mode analog intersection circuit for inference. Defuzzification function applies the principle of Center of Gravity that consist of voltage amplifier and divider. The circuits are designed as sub-circuits, thus it is flexible to add and remove the membership function as well as the rule. The controllers with good performance is obtained. This is illustrated by design results, in which the fuzzy controller result are compared with those obtained from PID controller.