

ABSTRACT

In general fuzzy logic is used for controlling systems in embedded systems. In designing a control system using fuzzy logic there are three processes: fuzzification, rule evaluation, and defuzzification. From each of these processes will affect the controlled system response. Defuzzification is the last step in a fuzzy logic system where the goal is to convert every result of the inference engine expressed in the fuzzy set to a real number. In this final project there will be implemented of two fuzzy logic that are fuzzy Tsukamoto and fuzzy Sugeno on automatic fence, so the gate will be able to open automatically by considering the distance between the object and the sensor located on the gate. The goal is to get a fuzzy method that gives optimum output results when applied to automatic gate.

This research method is based on comparing. Using average value and the response time from the result acquired from both fuzzy method. Both result are acquired from input of two ultrasonic sensors. This research conclusion is Tsukamoto Fuzzy is more effective when both of the sensors stands on the same distance against the object, while Sugeno Fuzzy is more effective when both of the sensors stands on different distance against the object. The average response time for Tsukamoto Fuzzy are 0.016 seconds while the object is staying still and 0.029 seconds while the object is moving, while Sugeno Fuzzy's average response time are 0.004 while the object is staying still and 0.025 while the object is moving.

Key Words: *Automatic Gate, Arduino, Sensor Ultrasonic, Fuzzy Tsukatmoto, Fuzzy Sugeno*

