DESIGN OF ELECTRIC SMART SCOOTER CONTROL SYSTEM USING FUZZY LOGIC

Friedrich. P
Electrical Engineering Study Program, Faculty of Science & Technology
University of Technology Yogyakarta
Jl. Ringroad Utara Jombor Sleman Yogyakarta
E-mail : friedrich.p06@gmail.com

ABSTRACT

The application of Fuzzy Logic to the Scooter control system is a development of the Scooter technology itself. Fuzzy Logic will be embedded in the Scooter control system via the Arduino microcontroller so that Scooter will experience increased control safety. The development of electric scooters is also increasing, just like electric cars and electric motorbikes. Electric Scooters are also future transportation that are modern and friendlier than conventional vehicles that exist today. In the Fuzzy Inference System there are three methods for doing Fuzzy inference, namely Tsukamoto, Mamdani and Sugeno. In this study the authors used the Mamdani method to adjust the speed of the Electric Scooter motorbike. The tests that have been carried out in this study have 2 input variables including Ultrasonic Distance and Gas Throttle. Based on the tests that have been carried out, when the distance detected by the sensor is less than 1 meter, the motor speed decreases rapidly in the PWM range 29.3 – 63.8. The average error from the Smart Electric Scooter test is quite small, only 0.813% from 35 experimental data. The research conducted has succeeded in improving the Electric Scooter technology by applying Fuzzy Logic control so that the Scooter becomes Smart in controlling speed.

Keywords: Fuzzy Logic, Electric Scooter, Motor Control