ABSTRACT

Balancing robot is the development of the concept of inverted pendulum. Balancing robot is a two-wheeled mobile robot which will not be able to walk by without a good control system. In balancing balancing robot requires a good control method so that the robot can balance itself without any outside force. At the writing of this study will be designed a balancing robot with fuzzy logic control method. Fuzzy logic controller will be embedded in the microcontroller arduino mega as controlling balance.

The final goal of this research is to apply the workmanship of a good control method in balancing robot so that the robot can walk in balance. Balancing robot uses sensors IMU (Inertial Measurement Unit) which is connected to the microcontroller arduino mega using I2C. Where the IMU is composed of a 3-axis accelerometer to detect tilt angle and 3-axis gyroscope to detect angular velocity on the robot. While the robot is used to drive two DC motors on the right and left of the robot.

From the test data that has been done, it appears that the data calculation of output fuzzy logic systems there are between 0-7% error caused by several parameters such as manual calculations that are less rigorous, the process of fuzzyfikasi systems that are uncertain. The performance of the robot system balancing robot using fuzzy logic dipengangaruhi by several parameters, such as, great value and shape of the membership function input and output systems, and rule-inference is embedded in the system

Keywords: Balancing Robot, fuzzy logic control, IMU, accelerometer, gyroscope