

## ABSTRACT

Electric Unicycle is a motorcycle wheel one that uses electrical energy as its power source. The advantages of this vehicle is using technologies that facilitate self-balancing while driving because the automatic control system. Self-balancing technology was also chosen because it has a high level of security so that the rider does not have to worry about falling.

Self-balancing technology on these vehicles use a combination of gyroscope and accelerometer sensors are included in the module MPU6050 GY521. These modules generate output information tilt angle of the vehicle with a benchmark of the normal line to the earth's gravity. The output is then filtered by Kalman Filter, using the Arduino Mega. Once the data is processed on the Arduino Mega, which will serve as the data will directly affect Brushless DC motor speed. The method used to process the BLDC motor speed is Fuzzy Logic Control.

By leaned forward, then the vehicle will automatically move forward. Similarly to braking, the driver only needs to move the body to the intended direction. Parameter Kalman filter is implemented in this thesis is Qaccelerometer = 0.001, Qbias = 0.003 and R = 0:03. While the parameters of Fuzzy Logic is used with PWM output with a range of values from 60 to 80.

Keywords: Accelerometer, Gyroscope, MPU6050, Electric Unicycle, Brushless DC Motor, Kalman Filter