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ABSTRACT

The numbers of motorbike increase day by day. However, it is not supported by the infrastructure, such as road widening causing accidents. The accident could be caused by several factors, such as road congestion,]riding learning process, unfamiliarity, and the instability of the motorbike used. Those factors may cause a crash or bump with another rider or even a single accident. Therefore, motorbike self balancing technology with gyrostabilizer flywheel was created using a PID control system which is useful for keeping motorbike standing stable.

The component used in this study was the IMU MPU6050 as an input device. As the brain of the system, the Arduino UNO R3 microcontroller was used through Arduino IDE application. The embedded Arduino algorithm was used to regulate the motorbike DC to control the gyroscope gimbal. The working system was the gyroscope driving DC motor which rotates for 15 seconds then the IMU MPU6050 sensor, which reads the orientation and tilt angle of the tool. the sensor readings were filtered using the Complementary Filter algorithm. The filtered sensor output was used as an input for the PID algorithm process. The results of the PID output were used to drive the gimbal controlling DC motorbike in improving the tilt angle .The tool testing showed the accuracy and precision of sensor readings. The accuracy test resulted of 98.12% and the precision test resulted of 99.76%.

Keyword : Flywheel, Gyrostabilizer, PID, Complementary Filter