ABSTRACT

Axis control technology is developing very rapidly, especially in the field of automation technology, most of which are not open source. Axis control instruments require at least one part of the same type, namely the Inertial Measurement Unit (IMU) sensor, in real conditions the IMU sensors sold on the market are much more efficient and easily available but have signal output that is still very much noise. In the tunning process the filter variable is done by trial and error so that to get a truly precise and flexible value becomes more complicated and takes a long time. To overcome this problem, we need a filter that matches the sensor character and must be able to measure each coefficient. The filter used is Kalman Filter. And the sensors used in this study are IMU (Inertial Measurement Unit) MPU6050.

In this final project aims to determine the best objective coefficients on IMU sensors to obtain high flexibility even across platforms. And all components can be measured not by trial and error. Then testing was done using balancing technology, namely ships and drones installed together.

Each test gets sensor data that is testing using drones obtained an average error of accelerometer parameters on the x-axis of 2.058%,-axis of 1,269% and the average gyroscope parameter of x-axis is 3,382%, y-axis is 5,714%. Then testing using a ship has accelerometer data on the x axis with an average error of 1.631%, y axis of 0.796% and the average gyroscope parameter of the axis x 5.816%, the y axis is 2.823%. Based on reference data and Kalman Filter, the algorithm applied has been running well and correctly according to technology conditions at the time of testing.

Keywords: *Platform, Trial and Error, Accelerometer, Gyroscope, Input, Output, Software, IMU.*