ABSTRACT

Indonesia is an archipelago with more than 70% of its territory consisting of abundant waters and rivers. Because of these geographical conditions, many Indonesian people still depend on water transportation as the main means of crossing transportation. However, many of the crossing transportation in Indonesia still uses a manual control system with the help of human labor to control the destination point of the boat.

Based on these problems, a prototype of the control and tracking system on the boat engine can be used as an automatic control system (autopilot) in water transportation. This system is designed using a waypoint control system that can navigate automatically to a predetermined location. In the design of control and tracking systems, this control system is designed with an electric control system that utilizes a microcontroller, GPS module and magnetic compass module as a navigation control device. Besides being able to be controlled automatically, the boat itself can be controlled manually through an application that is interconnected with bluetooth communication media.

In the trial phase, it is done by using an application that is installed on the smartphone as a manual boat controller and displaying the reading information from the system. Based on the coordinates reading test, the GPS accuracy level is obtained as far as 4.8 meters. Based on compass sensor testing, an average reading error of 6 ° is obtained with the largest error value being 11.1 °. Based on testing the navigation system (waypoint), the accuracy of the system as far as 10.8 meters is obtained. Bluetooth communication distance in communicating as far as 12 meters.

Keyword : Navigation, Waypoint Control, Microcontroller, GPS, Compass.