ABSTRACT

Navigation system on mobile robot can be interpreted as ability to guide movement from position to other position through positioning and direction of motion. There are several navigation systems used to drive mobile robots, such as waypoint controls. The waypoint control can be interpreted by system movements from the starting point to the reference point in the XY plane.

In this final project will be designed a mobile robot with waypoint control navigation system. The value to be given to the plant (moving robot) in the form of coordinate points that are divided into two, longitude and latitude. Value or data will be processed by the microcontroller into data in the form of distance and different angles between the reference point with mobile robot. The data will be processed by managing PID, whose output will be PWM. Use of PWM in this final project as a motor drive DC. The Neo6M-v2 GPS sensor will be used to read the actual robot position. The actual position of the robot will continue to be used to determine the distance and distance between the plant and the operator. In addition, HMC5883L compass sensor is used as a determinant of robot orientation direction.

Based on the results of the designed control implementation, it shows that the mobile robot can reach a given reference point with an accuracy value of 85.60% from a distance of 30 m, 86.55% from a distance of 40 m and 91.60% from a distance of 50 m. While the precision value obtained is 48.0815 from a distance of 30 m, 49,527 from a distance of 40 m and 59.30753 from 50 m.

Key words: *waypoint*, *longitude*, *latitude*, GPS, *plant*, PWM