# ABSTRACT

Mobile robot is a robot capable of moving from one point to another and flexible to be integrated with other systems in order to work more effectively. Mobile robots are now widely applied in agricultural, military and even industrial. in order to help meet human needs, mobile robots must have flexible and autonomous specifications.

In a mobile robot, the navigation system is needed for position monitoring and movement control of the mobile robot. In recent years, navigation systems based on longitude and latitude coordinate are being developed, i.e. waypoint systems. Navigation systems in mobile robots need to be equipped with a control system to work better. This control system works to maintain the actual position and direction of the mobile robot to the destination.

Thus, the authors designed a Fuzzy Logic control system that will be applied to the mobile robot waypoint navigation system. This navigation system works using GPS (Global Positioning System), and HMC5883L as a magnetometer sensor. The applied Fuzzy Logic control system receives inputs of distance and different angle of mobile robot to the destination coordinates, with PWM as an output for adjusting the speed of a DC motor as an actuator.

Based on the results of the implementation of Fuzzy Logic Controller on the mobile robot waypoint navigation system, the system succeeds in making the mobile robot move from its starting point to the destination coordinate and be able to adapt if the system being disturbed. Test results 1, waypoint system with fuzzy logic control generates error of 2.8 meters for destination 1, and 1.8 meters for destination 2. While test result 2, error generated by 2.4 meters for destination 1, and 3 , 9 meters to destination 2.


**Keywords :** *Mobile Robot, Fuzzy Logic Controller,  Navigasi Waypoint, GPS*