

ABSTRACT

Cleaning the floor is a routine for some people. Manual methods such as sweeping and mopping make people lazy to do cleaning activities. Not to mention if the floor gets dirty easily, then manual activities become tedious. One technology that is currently popular is a robotic vacuum cleaner. However, in this study, we did not use a robot vacuum cleaner but a floor mopping robot. The choice of floor mopping robot is because the process of mopping the floor will make the floor cleaner than sweeping the floor or vacuuming the floor.

This mopping robot moves automatically using an Arduino Mega 2560. By utilizing a differential drive, this floor mopping robot runs by winding like an 'S' pattern. In front of the robot will be installed three ultrasonic sensors, if all three detect an object then it is a wall and the robot will turn right or left alternately. If only two or one ultrasonic sensor detects the object then it is only an obstacle so the robot will avoid the obstacle, the maximum obstacle is 10 cm² in size.

Based on the test results, it can be seen that the floor mopping robot drive system as a whole is able to make the robot run according to its purpose. The robot can clean the floor at 6,795 m²/minute faster than the initial target of 1 m²/minute. The ultrasonic sensor test results state that all sensors are in good condition as evidenced by the percentage of accuracy of almost all sensors is 98% except the left side sensor which has an accuracy percentage of 91,41%. The application of differential drive on the robot makes it easy to determine the value of delay and PWM on the robot based on the results of empirical evidence.

Keywords: *Mobile Robot, Ultrasonic Sensor, Arduino Mega 2560, Differential Drive, IC555.*