ABSTRACT

Table tennis is a sport that is in great demand by people, both young and old. In table tennis practice sessions, lots of balls are needed to hone the table tennis players' ability to hit the ball. To pick up table tennis balls that have been scattered as a result of training, a considerable amount of effort is required.

In this study, an autonomous robot was designed to pick up a table tennis ball. This robot uses image processing to detect the ball, makes path planning to determine the path of the robot is picking up the ball and uses a differential drive for the robot's movement to the ball. The magnetic encoder inside the dc motor is used to read the robot's mileage and to turn. Rollers and sliders are used to pick up the ball.

In testing the mobile robot with a distance of 50, 100, and 150 cm, the accuracy is more than 92%. In testing turning right and left with turning angles of 45°, 90°, and 135° with the differential drive method, the accuracy is more than 93%. In testing the robot to the ball destination point following the results of path planning, it got more than 93% success and the robot was able to pick up the ball using rollers and sliders with 77% success.

Keywords : *mobile robot, table tennis, differential drive*