

## ABSTRACT

*AGV (Automated Guided Vehicle) is an automatic vehicle designed to be able to carry or move goods produced or goods to be produced. Usually AGV is widely used in the industrial sector to help speed up the transfer of goods.*

*In this final project, an AGV prototype will be designed which will bring the item to a destination by following the line. This AGV movement adjusts to the line read by the photodiode sensor, and after that the data will be sent using a bluetooth module to the microcontroller. Data is then processed in a microcontroller with PD control. PD control is used to reduce the error that will be generated when the AGV moves in line. The output of the PD control is in the form of PWM (Pulse Width Modulation) which functions to drive a DC motor. In order for AGV to run without any obstacles, an ultrasonic sensor is provided, the ultrasonic sensor serves to detect the distance between the AGV and other objects around the AGV so that when the AGV goes in line and it will not hit other objects in front of it or block the AGV.*

*Based on the results of the design of the AGV prototype made, it takes a configuration of values  $K_p$  20 and  $K_d$  0.11 to move AGV so that AGV runs at the set point value. From the results of the implementation of the tools that have been made, the AGV work system can go to the specified destination up to 86.67% and run on the set point based on the results of the test that is running AGV from the main point of the path to the destination point at the 5 destinations different according to the object produced from image processing data. When there are objects that block the AGV, the AGV will stop having accuracy up to 100%.*

*Keywords: AGV, line follower, PD control*