ABSTRACT

DESIGN AND IMPLEMENTATION PROTOTYPE OF LINE FOLLOWER ROBOT ON INDUSTRY USING FUZZY LOGIC CONTROLLER

The industrial world has grown rapidly. The grown of an industry has a positive impact on the country's economic growth. But negative impacts also occur in an industry with increasing potential hazards for workers. This potential comes from the industrial environment such as physical accidents, to the risk of disease due to chemical effects. This source of danger if not handled properly can result in accidents and illness for workers. Indstruial growth also followed by technology growth. Technological growth has had a high impact on large changes in the industrial world. In the world of industry the use of robots is highly prioritized to increase productivity, flexibility and speed of production. robots also makes an increase in product quality and reduces the risk of work. Therefore the use of robots is very necessary for the industrial world. Automatic guided vehicle is very necessary for robot in an industry. The basic concept of AGV is a vehicle that has the ability to pass a path. This robot can bring raw materials from an item or finished product. Line follower robot is one of the most popular. Fuzzy logic is an algorithm that is made so that robots have intelligence so they can navigate. Fuzzy logic is able to find solutions from a navigation and become a good control for a robot. In this study the researcher will make a prototype of AGV robot using the Arduino microcontroller. This robot will be equipped with an infrared sensor and a heavy sensor load cell. The control system in this robot will use a closed loop control system so that it will minimize the occurrence of errors and use the fuzzy logic controller to maximize robotic navigation. The prototype of the robot will be 1:10 10 scale and later it will be used to move objects from one point to another. The testing procedure starts from preparing a 2 x 2 meters test area equipped with black sign as a robot reference line. Then the robot will do a heavy detection, if the weight reaches 50 grams, the robot will start reading infrared sensors and start moving. From the results of tests, it can be seen that the use of fuzzy logic controllers can make maximize the navigation. From the results of the test, the failure of robot caused by broken part of robot and the position of each part on the robot.

Keyword: robot, industry, line follower, fuzzy logic controller