

ABSTRACT

The robot was created in order to help people do the work that requires precision and accuracy. Following this demand, the technology used in robotic sensor constantly evolving. Mobile Robot is a construction robots that has actuator formed by a wheels to move of whole body robot, so the robot is able to change position from one point to another with the aid of navigational sensors. Robot is set so that it has better ability to navigate the autonomous in identifying circumstances in which the robot operates.

In this final project designed a navigation system for a mobile robot that can work in an autonomous or commonly known as Autonomous Mobile Robot (AMR) using ultrasonic radar multisensor. The system was designed using five ultrasonic sensors are connected to a microcontroller as the input data of the robot so that the robot can recognize the environment during operation. The sensor is placed on the five-way of a mechanical robot. In the final this time used microcontrollers AVR ATMEGA 128 is used as the brain of the robot that can give commands and receive commands from the incoming data based five sensors used. The result of readings from the sensors will be displayed on the LCD 16x4. The algorithm used is the fuzzy algorithm, the algorithm is used as obstacle avoidance based on the weighting of five ultrasonic sensors. Fuzzy algorithms are expected to provide more system output closely, so the movement of the robot is smoother.

From the result , design of autonomus mobile robot using multisensor ultrasonik radar for the obstacle avoidance aplications, it was found that the system is running stable. It can be seen from the performance value that not changes so much in each experiment. The Delay Time (t_d) of three experiment yield the same value that is 338 ms, and the Rising Time (t_r) of three experiment yield also the same value that is 572 ms. The biggest difference in value of Peak Time (t_p) is 26 ms, the biggest difference in value of Steady State Time (t_s) is 26 ms. And the Maximum Overshoot (m_p) from three trials had the biggest difference value is 1,09 cm.

Keywords: *Autonomous Mobile Robot, obstacle avoidance, fuzzy logic*