

ABSTRACT

Indonesian Intelligent Robot Contest (KRCI) is the design and implementation of robot competitions, followed by universities in Indonesia. KRCI took the idea of robot contest held in Trinity College, Hartford, Connecticut, USA. With the theme of Intelligent Robot General Fire Extinguisher. These robots are required to have the ability to explore the arena is a maze game with obstacle avoidance such as mirrors, sound dampers, furniture, uneven floor, and the robot must be able to find the candle and then put it back to the start point with the shortest possible time. At the national level KRCI 2011 many robots in the past difficult to overcome uneven floor, only a few robots that can pass through.

To refine the storage of robot on KRCI 2011, then in this final project is done the design and implementation of fire fighting robot four wheel drive using the Wall Following Algorithm and PID as the controller. Following the algorithm of this wall is the algorithm used to navigate the robot down the field by holding on the wall. While PID control is a controller that has been widely used in both the industry and the contest robot because of its reliability and ease to use.

From design and implementation, the more it increases the value of K_p rise time (t_r) decreases, the overshoot (t_p) increases, and decreases the delay time. Whereas with the addition of the K_d values rise time (t_r) decreases, the overshoot (t_p) decreases, settling time (t_s) decreased. And the response of the PID parameters of the robot system is the best is when the value of $K_p = 160$ and at the value of $K_d = 115$ robot with a success rate in putting out the fire and back again to the beginning of the robot position (home) is 80%.

Keyword : KRCI, robot, PID, wall following, four wheel drive