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INTELLIGENT ROBOT SOLUTION SEARCHES THE WAY OUT IN A MAZE USING RIGHT WALL FOLLOW ALGORITHM

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ABSTRACT

The following wall is one of the robotic navigation systems used in competitions, such as the Indonesian Smart Robot Contest where the wall follower type robot can follow the contours of the walls arena. This type was chosen because the race arena of the contest consisted of the walls that formed hallway and the room. Ability of a robot to complete its mission is the focus, for that reason, a reliable navigation system is necessary. Robot control cannot be separated from a control system that can process the received signal to become a command that can move the robot and perform the task as desired. By applying the Right Wall Follower algorithm, it is expected that the robot will be able to complete its mission. So it is seen as having intelligence, because it can avoid the wall in front and beside it.

KEY WORDS: Wall Follow Navigation, Robotics, Microcontroller

INTRODUCTION

Technology of robotics has experienced rapid progress along with existing technological advancements. The development of robots is not only the sophistication of mechanical design, but also the control system using a computerized system. Along with the development of robot programming techniques, it makes easier for human kind to make robots that have intelligence to what people want and need.

Mobile Robot is one of construction with characteristic that has an actuator in the form of wheels to move the whole body of the robot it self, so that the robot can move positions from one point to another (Zulaikha, 2017). It can be made as remote control using gadget as the remote to move, line follower (Line Follower), touch wall (Wall Follower) or light follower. Car robot base can be easily made using plywood / plywood, acrylic to use metal (aluminum).

In this study the author try to decant the results of his research on an article entitled **"The Solution of Smart Robot Searching the Way Out in a Maze Using Algorithma Wall Follow the Right Wall".**

LITERATUR VIEW

A. Artificial Intellegent

Artificial Intelligence (Artificial Intelligence) is one of the deferential of computer science (computer science) specifically intended to create software and hardware that can fully mimic some of the functions of the human brain (Dahria, 2008) or a branch of computer science that studies intelligent behavior automation (intelligence).

B. Robotics

The word robot comes from the Czech language, robota, which means '*worker*'. The word robot was introduced in English at in 1921 by Wright Karel Tired of a drama, "Rossum's Universal Robots" (R.U.R). Robots are machines assembled works of human beings, but works without knowing tired. At first, robots were created as work assistants human, but in the future, the robot will able to take over human positions completely and even replace the human race with various types (Pitowarno & Endra, 2006).

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C. Robot Equipment

1. Microcontroller

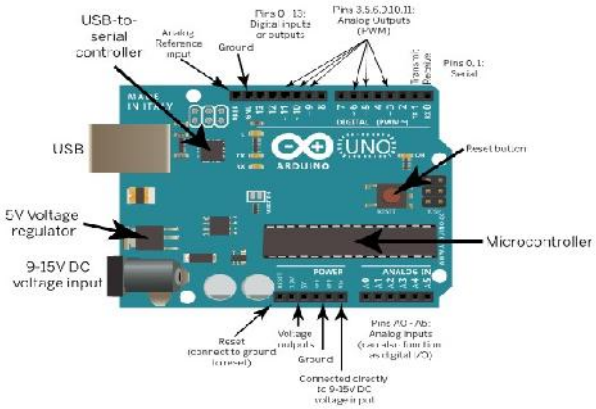

Fig 1. *Arduino Uno*

2. Ultrasonic Cencor

Fig 2. *Ultrasonic HC-SR04*

3. Motor Sheild

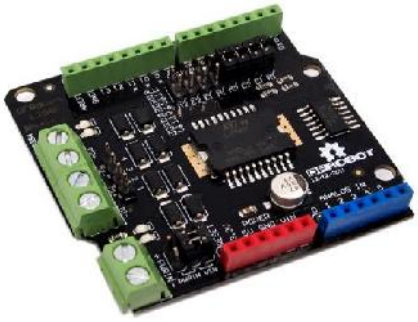

Fig 3. Motor Sheild Arduino

4. Jumper

Fig 4. Jumper

5. Wheel, Motor DC, Chassis, and power supply

Fig 5. Base of Arduino Uno

6. LCD (Liquid Crystal Display)

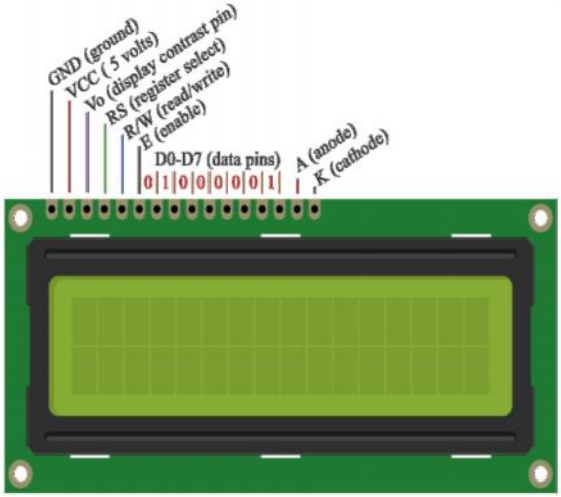

Fig 6. LCD Display

7. Labirin

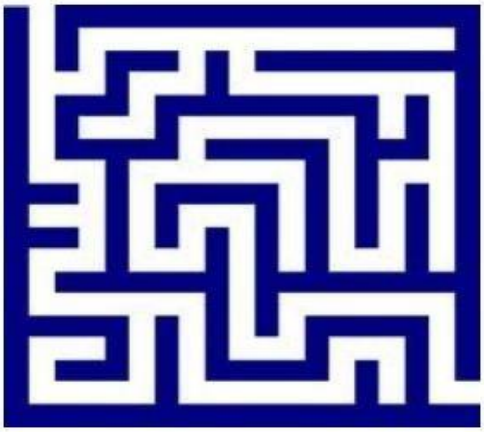

Fig 7. *Maze arena*

DISCUSSION

The research methodology has a very important role in the writing of a scientific study, in this research part,

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systematic logical steps taken in solving the problems raised. The description is complemented by the presentation of the flowchart of the research implementation to facilitate the understanding of the research stages.

A. Research design

There is two part ot algorithm wall follower, namely the right wall follower and the left wall follower. In this study the author took the right wall as a parameter for the sensor to determine the wheel speed. The algorithm is as follows (Firman, 2016):

1. Two sensors installed, placed at *FRONT* side and *RIGHT* side positions.
2. RIGHT sensor is responsible for detecting the distance of the Robot to the right wall. The parameters of the average distance of the Robot to the wall are 7 cm (hereinafter referred to as Set Point).
3. Difference position of the robot that is read by the RIGHT sensor and the Set Point we declare as an error.
4. To reduce the error value so that it is always ZERO we use Proportional control.
5. Simply point 3 and 4 explain that when the Robot position is too close to the wall (less than 7 cm) the Robot will move away from the wall. Likewise, when the Robot is too far from the wall (more than 7 cm), the Robot will move closer to the wall.
6. FRONT sensor functions to detect the wall in front. When it is close enough to the wall in front, the Robot will automatically turn left.

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