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LINE FOLLOWER ROBOT A MINI PROJECT REPORT Submitted towards the professional course 15Z601 EMBEDDED SYSTEMS LABORATORY Harhi Varrman V (17Z318) Johann Andre Sebastain A (17Z322) Sashwath K G (17Z345) Bachelor OF ENGINEERING Branch: Computer Science and Engineering 242824010604500 FEBRUARY 2020 Department of Computer Science and EngineeringPSG College of Technology,Coimbatore INTRODUCTION: A line follower robot is essentially created to trail a line or path. A simple line/path or as compound path marking structures can be used. Numerous sensing schemes can be used in order to sense these markers or lines. The sensing accuracy and flexibility is determined by the kind of schemes to be used. Sensor positioning also plays a dynamic role in improving the robot's performance. Primarily, a line-following robot is a self-moving robot that detects and follows a line or a path. The path is designed by using a black line on a white surface. PROBLEM STATEMENT: Detecting a line and steering the robot to stay on path, while continuously adjusting mistaken moves using feedback mechanism forms an unpretentious yet effective closed loop system. This is basically creating the human emotion of "Responding to Stimulus" in a robot. Practical applications of a line follower: Automated Cars – Tesla Manufacturing Unit - Tesla Components Required: Arduino UNO L293D Motor Driver IC Motor Shield DC Motors x 2 Robot Chassis IR Sensor Module x 2 Black Tape (Electrical Insulation Tape) Connecting Wires Power supply Battery Connector Battery Holder Schematic Diagram: Code: int EA = 9; //ENA connected to digital pin 9 int EB = 3; //ENB connected to digital pin 3 int MA1 = 7; // MOTOR_A1 connected to digital pin 7 int MA2 = 6; // MOTOR_A2 connected to digital pin 6 int MB1 = 5; // MOTOR_B1 connected to digital pin 5 int MB2 = 4; / / MOTOR_B2 connected to digital pin 4 int RI = A0; // RIGHT sensor connected to analog pin A0 int LF = A1; // LEFT sensor connected to analog pin A1 void setup() { pinMode(EA, OUTPUT); // initialize ENA pin as an output pinMode(EB, OUTPUT); // initialize ENB pin as an output pinMode(MA1, OUTPUT); // initialize MOTOR_A1 pin as an output pinMode(MA2, OUTPUT); // initialize MOTOR_A2 pin as an output pinMode(MB1, OUTPUT); // initialize

MOTOR_B1 pin as an output pinMode(MB2, OUTPUT); // initialize MOTOR_B2 pin as an output pinMode(RI, INPUT); // initialize RIGHT pin as an input pinMode(LF, INPUT); // initialize ENA pin as an input } void loop() { if (analogRead(RI)<=35 && analogRead(LF)<=35) //compare the both sensor to decide the direction { analogWrite(EA, 100); // set right motors speed analogRead(LF)<=35) //compare the both sensor to decide the direction { analogWrite(EA, 255); //set right motors speed analogWrite(EB, 255); //set left motors speed //run right motors clockwise digitalWrite(MA1, LOW); digitalWrite(MA2, HIGH); //run left motors anti-clockwise digitalWrite(MB1, LOW); digitalWrite(MB2, HIGH); } else if (! analogRead(RI)<=35 && analogRead(LF)<=35) //compare the both sensor to decide the direction { analogWrite(EA, 255); //set right motors speed analogWrite(EB, 255); //set left motors speed //run right motors anti-clockwise digitalWrite(MA1, HIGH); digitalWrite(MA2, LOW); //run left motors clockwise digitalWrite(MB1, HIGH); digitalWrite(MB2, LOW); } else if (!analogRead(RI)<=35 && ! analogRead(LF)<=35) //compare the both sensor to decide the direction { analogWrite(EA, 0); //set right motors speed analogWrite(EB, 0); //set left motors speed //stop right motors digitalWrite(MA1, LOW); digitalWrite(MA2, LOW); //stop left motors digitalWrite(MB1, LOW); digitalWrite(MB2, LOW); } } Challenges Faced: Determining the position of sensors. Soldering the Components perfectly Contribution of Team Members: Building the Robot – Harhi Varrman and Johann Implementation – SashwathReferences: [1] Pakdaman, M. and Design and implementation of line follower robot. In 2009 Second International Conference on Computer and Electrical Engineering (Vol. 2, pp. 585-590). IEEE. [2] Bajestani, S.E.M. and Vosoughinia, A., 2010, August. Technical report of building a line follower robot. In 2010 International Conference on Electronics and Information Engineering (Vol. 1, pp. V1-1). IEEE. [3] Pakdaman, M., Sanaatiyan, M.M. and Ghahroudi, M.R., A line follower robot from design to implementation: Technical issues and problems. In 2010 The 2nd International Conference on Computer and Automation Engineering (ICCAE) (Vol. 1, pp. 5-9). IEEE. [4] Chowdhurya, N.H., Khushib, D. and Algorithm for line follower robots to follow critical paths with minimum number of sensors. International Journal of Computer, 24(1), pp.13-22. [5] https://www.scribd. com/doc/59265674/Line-Follower-Report

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