LINE FOLLOWING ROBOT USING CAMERA

TEAM MEMBERS

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INTRODUCTION

A line follower robot is a robot which follows a certain path controlled by a feedback mechanism. The path can be visible like a black line on a white surface (or vice versa). Sensing a line and guiding the robot to stay on course, while constantly correcting. Some of the practical applications of a line follower are industrial applications were these robots can be used as automated equipment carriers in industries replacing traditional conveyer belts in automobile. Some recent development is of line follower is seen in applications such floor cleaning, guidance in public places, library assistance entertainment, education etc.

Literature Review(LR)

Sr No	Author of Paper	Publication	Paper Title with investigation	Findings
1	Inian Roy, Karthick raja, Chakkaravarthy, Arun Prakash.	Ijates ,ISSN : 2348 – 7550 Volume No.03, Special Issue No. 02, February 2015	Title : "Line following robot based on vision techniques". Investigation : Implemented 2D vision algorithm	Basic idea to implement 2D vision algorithm in our project.
2	John Patrick P. Banjao, Louis Van Hecke, Wansu Lim, Myung-Sik Kim.	(IJITEE) ISSN: 2278-3075, Volume-9 Issue-1, November 2019.	Title : "Line Tracing Technique for Smooth Driving". Investigation : implement line tracing algorithm using the PaLo Technique.	Basic idea for implementation of our project.
3	A. H. Ismail, H. R. Ramli, M. H. Ahmad,. M.H.Marhaban.	2009 IEEE Symposium on Industrial Electronics and Applications (ISIEA 2009), October 4-6, 2009	Title : "Vision-based System for Line Following Mobile". Robot. Investigation : Overview of image processing.	Basic idea to implement image processing

Problem Statement

In the industry carriers are required to carry products from one manufacturing plant to another which are usually in different buildings or separate blocks. Conventionally, carts or trucks were used with human drivers. Unreliability and inefficiency in this part of the assembly line formed the weakest link. The project is to automate this sector, using carts to follow a line instead of laying railway tracks which are both costly and an inconvenience.

Aim & Objectives

- The robot must be capable of following a line.
- It should be capable of taking various degrees of turns.
- The robot must be insensitive to environmental factors such as lighting and noise.
- It must allow calibration of the line's darkness threshold.
- Scalability must be a primary concern in the design.

Scope of Project

- All required mathematical calculation for the project.
- Integration of camera with robot to implement Machine vision.
- Feasible program that will take input through camera and calculate correct path for movement.
- To create architecture and assemble the robot.

Future Scope

- To detect and avoid obstacle using Ultrasonic Sensor.
- If it detects traffic ahead in the line then, it will choose alternative path if it's available.

Reference material

Youtube

Channel : DIY Builder

Link : https://www.youtube.com/watch?v=t7k9D1jDEtk

Journal Paper

John Patrick P. Banjao, Louis Van Hecke, Wansu Lim, Myung-Sik Kim.

Line Tracing Technique for Smooth Driving.
(IJITEE) ISSN: 2278-3075, Volume-9 Issue-1, November 2019.

Reference Site

www.electronicshub.org

Line Follower Robot using Microcontroller.

Thank You