ADVANCED LINE FOLLOWER

Abstract:-

- The project is basically an" Advanced Line Follower". Unlike primitive line followers like the Bang Bang line follower whose equation was simply a proportional one, which gives highly oscillatory outputs, the Advanced Follower implements PID a widely useful tool to trim the oscillations and give a smooth output.

- The project deals mainly with robotics, which is our special area of interest. The project deals with Arduino coding, and the analysis of PID and its implementation, and as PID is an extremely important tool in the industry of control systems and applications to behavioral algorithms, it has a high weightage to the society in general and thus are the main motivators behind picking up this project.

- The overall aim of the project is to create a highly robust, and adaptive, if not intelligent robot that can follow mazes and complex line paths, owing to its PID algorithm and interfacing.

- The robot also has an extremely good user interface, with LCD screen displays.

SPECIAL AREA OF INTEREST:

- The specialty of this robot compared to others is the use of PID (Proportional Integrator Derivative) to give a smooth, near real life autopilot implementation. The use of PID and its wide applications in sensory data, Artificial Intelligence and behavioral algorithms are one of the main areas of special interest.

- Moreover, the use of highly user friendly LCD screen display with available menu options that allow the user to control the bot wirelessly using Bluetooth and provide the necessary information along with its application elsewhere, is also a special area of interest.

- Finally, the use of Arduino coding and Arduino in general as an extremely useful micro controller is also a main motive and area of interest.

Type of project:

Our project, smart home, is an Internet of Things based product. It is a market oriented product, and has domestic uses. It can be implemented in all types of homes and is advantageous as it helps in lower power consumption by constant monitoring of power usage. Hence this product will also have good demand among the general public.

Feasibility

The project was feasible in the given time constraint and with the given budget. By November, we had learnt how to use the Arduino microcontroller and learnt how to code on it. We also had a general idea of the hardware aspects of the project.]

In the meets that followed, we discussed about how to tackle the software parts of the project. Provided we have about 50 days in hand, till the expo, we have sufficient time to complete the project. Moreover, we have split up the tasks among 4 of us, hence time is not a problem we could face in near future.

Budget

Rs.3500(Bills were submitted to treasurer)
Link: BillPdfLink

Team members

Mentors (3)
1. K.S.S.M.Kamal
2. M.Pavan
3. Kiran Khunte

Members (4)
1. Ritwik Udayagiri
2. Mahesh Nanda
3. Sachin Goud
4. Stephan

BASIC APPROACH

- Our project basic aim is to design and build a Multi-Purpose robot which can follow line using PID algorithm. It has several other functions maze solving and object following which can be selected wirelessly using Bluetooth Module.
- To detect the line, we are using IR Sensors. We are using Noise removal techniques to reduce the effect of ambient light in sensor readings.
- All the circuits that are designed in this project will be prototyped in to PCBs using Toner-Transfer method

Timelines:

1. **September and October 2017**
   To learn about Arduino, different types of sensors, Motors and basic electronic components.

2. **December 2017(winter holidays)**
   Learned about basics of PID and differential drive mechanism.

3. **January 2018**
   Checking and learning about all the components going to use in the project

4. **February 2018**
   Completion of the project and checking.