Line Tracking Robot

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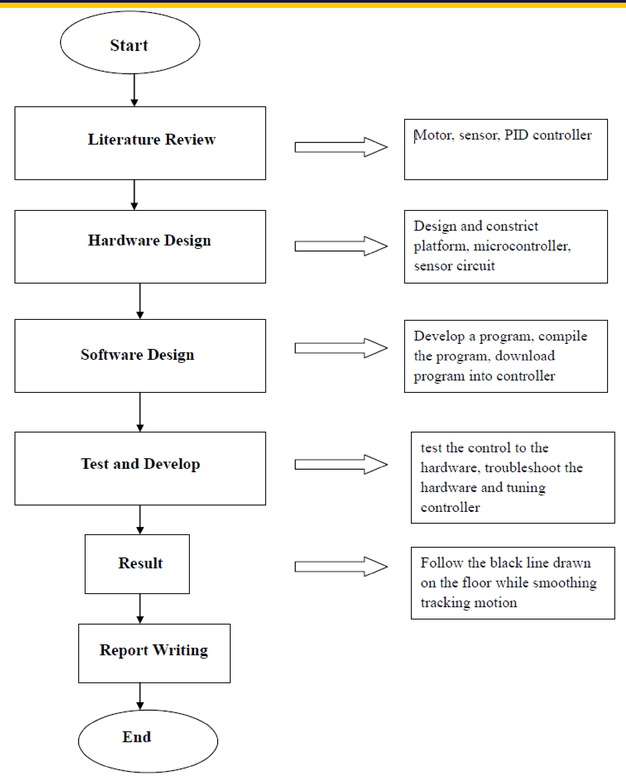
Abstract

The Line Tracking robot is a mobile machine that can detect and follow the line drawn on the floor. The path the Robot follows is predefined and made visible using a black line on a white surface with a high contrasted color. The Robot senses the line with its Infrared Ray (IR) sensors that are installed in front of the robot.

Objectives

- To design and develop an autonomous robot that follows a black line drawn on the floor while smoothing the tracking motion by using digital control
- To study the concept of light sensor, motors, PID controller.
- To design the construct the platform of line following robot, the PID controller, sensors and drive system.
- To test and tune the PID controller to achieve better performance.

Methodology



References

Programming and Customizing the AVR Microcontroller – Dhananjay V. Gadre

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Images

Results

PID input values were chosen as 1/20 (proportional), 1/10000 (integral) and 3/2 (derivative) represent adjustable parameters that determine how the robot will react to the line. Increasing these PID parameters will make power difference larger, causing stronger reactions, while decreasing them will make the reactions weaker

Conclusion

The PID microcontroller based Line Tracking Robot gives the knowledge about the practical use of microcontroller in terms of simple programming and program burning process. It gives idea about controlling of motors by using PID controller. The robot makes itself move over a black line by collecting the information about the position of a line being raced and making correction by alternately driving