CHAPTER 1

INTRODUCTION

1.1   Overview

Robot becomes widely used in industrial due to their characteristics. Robot able to work in 24 hours continuously without feeling tired unlike human that confine to certain time. The cost to setup the robot nowadays becomes more affordable and their long term prospect is bright judging from their capacity to perform. But in reality, there is no robot able to functions perfectly and still making error. A better controller needed here, to allow the robot performs efficiently and make less error.

This project try to implement a PID controller on mobile robot to see whether the robot perform efficiently. This mobile robot has a line tracking module, where it will follow the track that made from black tape. This is area where the PID implemented, the robot will be able to follow the black tape effectively and moving along the track smoothly.

1.2   Objectives

The main objective of this project is to design a line follower robot with PID controller and compare effect of PID.

1.3   Scope of projects

This project is focused to design and build the prototype line follower robot and implement PID controller. Therefore, this prototype will cover scope as followed:

i.   Design line follower robot using PIC 16F877A.

ii.   PID controller implementation through programming in PIC 16F877A by using BASIC LANGUAGE.

iii.   In the end of project, we compare a robot movement with PID and without PID controller by inspecting the pattern of movement of the robot while following the track.

1.4   Problem statements

Line follower robot can be easily designed by using concept on and off. But this type of design will make robot not be able to follow the smoothly and sometimes robot tends to move out of the track. So to overcome that problem, we need a better controller to make robot follow the line smoothly and make less error. In this project, we are using PID controller because of easy to understand and implement on mobile robot.

1.5   Thesis organizations

This thesis consists of five chapters. This chapter discuss about overview of project, objective research, project scope, problem statement and thesis organization.

Chapter 2 contains a detailed description of Line follower robot and PID controller. It will explain about the concept of algorithm of line follower robot and PID implementation on robot.

Chapter 3 includes the project methodology. It will explain how the project is organized and the flow of process in completing this project. Also in this topic discusses the methodology of the system, circuit design, software design and the mechanical design.

Chapter 4 will be discussing about the result obtained in this project and a discussion about the result.

Finally, the conclusions for this project are presented in chapter 5. This chapter also discusses about the recommendation for the project and for the future development.