RAILWAY CROSSING SYSTEM USING MICROCONTROLLER

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ABSTRACT

In Malaysia, generally there are many railway tracks crossing the main road. Therefore many systems were introduced to overcome accident between train and road user. Traditionally, the railway crossing system with the crossing gates are controlled manually. Applying the level crossing is the solution to the railway-crossing dilemma in many parts of Malaysia.

Regarding this thesis it presents the development of a new electronic circuit to control traffic light system and crossing gate in railway junction. This circuit is fully automatic, and easy to use. The main components to perform this project are Microcontroller (PIC16F84A), stepper motor, stepper motor driver and display. The software is written in PIC language using MPLAB, which will control the overall circuit. The software needs to be written and download into the microcontroller to operate the circuit.

Concerning the result obtained in completing this project it showed that the project has a potential in marketing it, mainly in Malaysia.

KEYWORDS

Microcontroller, Microcontroller Unit, Peripheral Interface Controller, MPLAB, Stepper Motor.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

In Malaysia, commuting by train is considered as one of the most preferred public transport and Keretapi Tanah Melayu Berhad (KTMB) is the soul provider of such service. However, due to the nature of the terrain, railway lines were sometimes laid or cut across roads. A railway crossing system is normally introduced to avoid accidents with the road users.

Nevertheless, it is observed that this system is not applicable within city limits or in urban areas for fear of creating traffic congestion. To overcome that, tunnels were created for the train or alternative routes for road users were introduced. Due to the enormous amount of cost involved, these may not be cost effective for the same to be introduced in the rural areas. Hence, the manual system is being retained.

As a solution, this project is devoted towards developing an automatic low cost system for railway crossing control. Although the designed is only a model it could be commercially produced with minor adjustments.

This project presents a system for railway crossing, by adapting the PIC (Peripheral Interface Circuit) 16F84A microcontroller, which control the railway crossing automatically. It also controls the traffic light system and the gates. A software has been developed for the microcontroller to read the signal from the sensor and produce a suitable output to control the traffic light and also the gate.