

FACULTY OF ELECTRICAL ENGINEERING

UNIVERSITI TEKNOLOGI MARA

PULAU PINANG

FINAL REPORT:

T- JUNCTION TRAFFIC LIGHT USING IR SENSOR

NUR SYAMSIAH BINTI AHMAD ZAILANI

2014698272

SITI NAJIHAH BINTI MOHD KHARNAIN

2014200038

SUPERVISOR:

PUAN SHARIFAH SALIHA SYED BAHROM

ACKNOWLEDGEMENT

The success and final outcome of this project required a lot of guidance and assistance from many people. We extremely fortunate to have got this along the completion of our project work. Whatever we have done is only due to such guidance and assistance and we would not forget to thank them.

First and foremost, we offer our sincerest gratitude to our supervisor Mrs. Sharifah Saliha Syed Bahrom for guiding and correcting various documents of our with attention and care. She has taken pain to go through the project and make necessary correction as and when needed. Next we respect and thank our panels Dr. Yusnita Mohd Ali and Mrs. Norsabrina Sihab for giving us chance and opportunity to do the project work and providing us all support and guidance plus correction from our previous one.

We are also indebted to our collogues of electronic and communication whose have helped, inspired and given a moral support and encouragement in various ways. We are pleased to acknowledge the helpful comments and suggestions provided during the completion of the project.

ABSTRACT

The traffic light is signaling devices positioned at road intersections, pedestrian crossing, and other locations to control flows of traffic. There are different types of traffic light such as 4 ways traffic light and T-junction traffic light. For our project we have an idea of doing T - junction traffic with IR sensor at the minor road. This project reduced the traffic congestion that usually happened at the minor road due to the drivers need to make sure that the main road is clear and safe to crossover the road. The main road also normally always busy, so this will effect the drivers on the minor road. By placing the IR sensor at the minor road, it will send the signal to the traffic light to give them crossover the road and set it around 15 seconds. The purpose of this project is to give some advantages towards minor road users. Therefore, improvising the T-junction traffic light needs to be done by bringing in the T-junction traffic light using IR sensor. This IR sensor will detects the presence of vehicle at the minor road and send the signal to the system that had been programmed into a microcontroller (PIC16F877A). Besides that, output devices such as LED, BCD decoder and 7 segment display is implemented into the system.

TABLE OF CONTENTS

ACKNOWLEDGEMENT	ii
ABSTRACT	iii
TABLE OF CONTENTS.....	iv
LIST OF FIGURES	vi
LIST OF TABLES.....	viii
LIST OF ABBREVIATIONS.....	ix
CHAPTER 1 : INTRODUCTION.....	1
1.1 Background of Study	1
1.2 Problem Statement	2
1.3 Objectives of Research.....	2
1.4 Scope of Study	2
CHAPTER 2 : MATERIALS AND METHODS	3
2.1 Methodology	3
2.1.1 Flow chart of the system.....	3
2.1.2 Block diagram of T-junction traffic light with IR sensor	4
2.2 Experimental Setup.....	5
2.2.1 Simulation.....	5
2.2.2 Hardware.....	5
2.3 Components and Machines	6
2.3.1 Components	6
2.3.2 Machines.....	8
CHAPTER 3 : CIRCUIT DESIGN AND OPERATIONS.....	11
3.1 Software Development.....	11
3.2 Hardware Development	14

CHAPTER 1 : INTRODUCTION

1.1 Background of Study

Traffic lights also known as traffic signals, traffic lamps, traffic semaphore, signal lights, stop lights are signaling devices positioned at road intersections, pedestrian crossing and other locations to control flows of traffic. Traffic lights alternate the right way accorded to users by displaying lights of the standard color following a universal color code.

In the typical sequence of color phases:

- The green lights allows traffic to proceed in the direction denoted, if it is safe to do so and there is room on the other side of the intersection.
- The yellow light warns that the signal is about to change to red. Actions required by drivers on a yellow light vary with some jurisdictions requiring drivers to stop if it is safe to do so, and others allowing drivers to go through the intersection if safe to do so.
- The red signal prohibits any traffic from proceeding.

This traffic light are specially designed for t junction road. Usually at T-junction, rarely has a traffic light. So this project was designed as T-junction traffic light that allow vehicles drove out to main road only. There are not many T-junction that known have this kind of situation. The absence of traffic light at T-junction give some disadvantages to vehicles at the minor road. So students have come out with this idea which is T-junction traffic light that provided with IR sensor and 7 segment. [1]