

**INFRARED CANE FOR THE BLIND PEOPLE**

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**UNIVERSITI TEKNIKAL MALAYSIA MELAKA**

# **INFRARED CANE FOR THE BLIND PEOPLE**

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This report is submitted in partial fulfilment of the requirements for the award of Bachelor Degree of Computer Engineering (Computer Electronic) With Honours

**Faculty of Electronic and Computer Engineering  
Universiti Teknikal Malaysia Melaka**

**April 2009**



**UNIVERSITI TEKNIKAL MALAYSIA MELAKA**  
FAKULTI KEJURUTERAAN ELEKTRONIK DAN KEJURUTERAAN KOMPUTER

**BORANG PENGESAHAN STATUS LAPORAN**  
**PROJEK SARJANA MUDA II**

**Tajuk Projek** : INFRARED CANE FOR THE BLIND PEOPLE

**Sesi Pengajian** : 2008/2009

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Special dedication to my loving father Seth Bin Hassan, my mother Hamidah Binti Mohd Yusof, my siblings, my kind hearted supervisor Mr Mohd Riduan Bin Ahmad, and my dearest friends.

## ACKNOWLEDGMENT

My sincerest thanks go to my supervisor, Mr Mohd Riduan Bin Ahmad for her dedication to his student and patience in assisting me with this thesis. I appreciate his valuable advice and efforts offered during the course of my studies. I would also like to thank to Mdm. Niza Binti Mohd Idris lecturer of Faculty of Electronic Computer.

Special thanks to go to my roommate Julita Binti Ali and my friends for their invaluable assistance towards thus thesis project. I appreciate their friendship and sympathetic help which made my life easier and more pleasant during graduate studies. Lastly,. Besides that, I am also thankful to all the lecturers that also giving me some ideas and knowledge that can be used to accomplish the PSM project. Not forgotten to my friends who had also helped me in giving their thought, pro and contra of each of the research and result that I had obtained. Once again for the last time, I would like to express my gratitude to those people that already mentioned above as well as the BENE's student of Electronic and Computer Engineering Faculty who provide many suggestions, information, and criticism and sustain in this report.

## ABSTRACT

Infrared cane is design to help the blind people. This cane can help the blind people to recognizing between alive or death. The blind people can recognize the objects in front of them in distance 2 meters. These canes have power supply circuit, infrared sensor circuit and temperature sensor circuit. The sensor circuit using infrared for detect motion where across the light beam of infrared. For temperature sensor circuit are using for detect the temperature of alive like human or animals.

If in front of the blind people is alive, so the infrared sensor and temperature sensor will operation but if only death, also infrared sensor will operation. In this system if it detects every motion, automatically the buzzer will sound. In other word, this system can help the blind people for their live.



## ABSTRAK

Tongkat infrared ini direka untuk membantu orang buta bergerak. Tongkat ini juga dapat membantu orang buta mengenali benda hidup dan benda mati. Sistem yang digunakan ini dapat mengesan objek dalam lingkungan 2 meter dari tongkat tersebut. Tongkat ini mengandungi litar bekalan kuasa, litar pengesan inframerah dan litar pengesan suhu. Litar pengesan inframerah akan mengesan pergerakan yang melintasi pancaran cahayanya. Litar pengesan suhu digunakan untuk mengesan suhu benda hidup seperti manusia atau haiwan.

Sekiranya dihadapan orang buta adalah benda hidup, maka litar pengesan suhu dan litar pengesan inframerah akan beroperasi dan jika benda mati hanya litar pengesan inframerah beroperasi. Jika sistem ini dapat mengesan pergerakan, secara automatik buzzer berbunyi. Dalam erti kata lain, sistem ini dapat membantu orang buta berada dalam keadaan berjaga-jaga dari bahaya.

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## LIST OF ABBREVIATIONS

IR – Infrared

LED – Light Emitting Diode

Hz –Hertz

IR LED – Infrared Light Emitting Diode

PCB – Printed Circuit Board



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## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 PROJECT BACKGROUND**

Crossing points are the places in any journey where the traveler is most vulnerable to danger in the form of collisions with passing vehicles which can result in serious injury or death. This significance is widely recognized by blind persons themselves, and by Orientation and Mobility Specialists, who instruct blind persons in independent travel, and who spend a good deal of their instructional time teaching techniques.

At signalized intersections in busy urban areas, many confusing cues are presented to the blind traveler who must rely primarily on traffic sounds to determine the geometry of intersections, the nature of traffic control, and when it is safe to cross. The usual cue for determining when it is safe to cross at signalized intersections is the detection of surges of traffic beginning to move parallel to the pedestrian's direction of travel. However, anywhere that turns are allowed, safety is not assured by this cue. In addition, even for the most experienced traveler, there are certain things which can not be determined by sound, such as whether a median or turning island exists. Having full access to all information about intersection geometry and traffic control lowers the risk of making an inaccurate judgment.

Infrared cane is produced to give facilities for the blind people to detect obstacle front of them. These obstacle such as human, drain and wall which can

progress the passage of them. Important element in this cane is infrared radiation where can detect the object in distance 2 meters. The output from buzzer can discharge signal to the blind people if has obstacle in front of them and the blind people can change the safety place.

The cane can differentiate between alive or death. The cane use temperature sensor circuit for detect temperature from alive. So if the front of the blind people is alive, the motion circuit and temperature circuit can detect and the buzzer vibration. If the front of blind people is death, only the motion circuit can detect.

## 1.2 PROBLEM STATEMENT

In this life, cane is the important thing for the blind people. The cane can be helping the blind to detect the obstacle. Before developed this project, we must know the problem in this projects. After researching, we make differentiate between electronic cane will develop and normally cane and between electronic cane will develop and electronic cane in market.

For normally cane, the practical use are manually which the detecting objects base on suppose the blind. So if the blind think in front of them is drain, they change the passing. .

Comparing the electronic cane will develop, the blind must know the hazard in front of them in 2 meters. So the blind can change the passing at safety place. This cane will sound which can improves the high sensitivity for the blind if has a hazard.

For electronic cane in market, it use ultrasonic in this system. At this cane, it uses earphone and wearing the blind to hear sound if the cane detect hazard. Comparing the electronic cane will develop, cannot use earphone because when the infrared light detect obstacle, automatically sound will triggered as signal.

### 1.3 PROJECT OBJECTIVE

1. To help the blind people walking with electronic cane
2. To detect and obstacle placed just in front of head
3. To judge the mobility of blind people in their everyday life
4. To design a portable cane will be useful for the blind individual
5. To study the functions of infrared

### 1.4 PROJECT SCOPE

A several scope of work has been determined:

1. To design and simulation the system by using Multisim software
2. To fabricate the system on the circuit board.
3. To use the etching technique.

This project introduces the new concept of an electronic cane for blind people. Infrared Cane is also able to recognize most common objects and environment clues to increase the safety and confidence of the navigation process. The originality of Infrared Cane is the use of simple sensors, such as infrared, to inform the subject of the presence, for example, of a stairway or a zebra crossing

In this system we use motion detector circuit and temperature circuit. For temperature circuit, we will sound the alarm (buzzer) when human body temperature is detected. The second sensor we use motion detector circuit using the main component is infrared. It cannot be seen but it can be detected the motion. Objects that generate heat also generate infrared radiation and those objects include animals and the human body

## 1.5 CONTRIBUTIONS

1. Has a range of settings, with sensors able to detect objects at a short or long distance.
2. Has a comfortable, contoured handle to minimize any risk of Repetitive Strain Injury and has been found to enable use even with arthritic hands.
3. Can be customized to the style and height
4. Is lightweight with a carefully tested height/weight distribution.
5. Has a fashionable, appealing design.
6. Is collapsible with easily replaced component parts.
7. Is very reasonably priced.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 BACKGROUND STUDY

This chapter provides some examples, case studies and other relevant works were done by other people in the past. Besides, it focuses on the various theory and basic knowledge used in the project. Many researchers have presented the block diagram and the synthesis of system.

#### 2.2 BLOCK DIAGRAM

The figure on the next page was shown the infrared cane system. The input has to detect the motion and the blind people know the dangerous. The four sections are shown in the block diagram below.

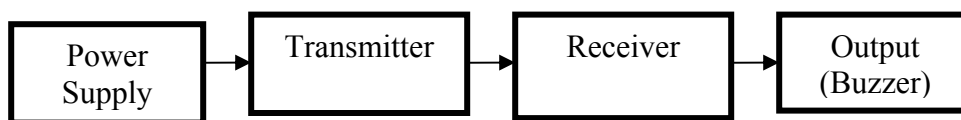


Figure 2.1: Block Diagram for Infrared Cane

In this system, the blind people will on the power supply when they want use the cane. When the system will ON, it means the circuit is in ON condition. So if had an obstacle in front of them, the circuit can detect and triggered the buzzer.

### **2.2.1 POWER SUPPLY**

In this project, power supply it uses is 9V. In block power supply has voltage regulator to decrease the voltage supply to 5V.

### **2.2.2 TRANSMITTER**

Transmit circuit is a very important circuit in this project because have infrared which can use to send the signal. This circuit gives the infrared beam happen. The infrared light beam is send by infrared LED. The light radiate are illusion so cannot sea by eyes. Frequency produce by transmitter is 38 kHz and frequency modulation is 250Hz.

### **2.2.3 RECEIVER**

Receiver from infrared violet is Module Receiver IR which it uses to detect infrared light. This Module developed by frequency specification to accept the great 38 kHz. So the duty of receiver to produce the frequency great is 38 kHz so that the infrared signal are send can accept the user.