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Design and Development Qibla Compass for Blind People

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Abstract
This study has been conducted to improve the prototype of Qibla compass for visual disable people (blind people). The main structure and component of the device is a magnetic compass which was modified to fit in prototype. The infrared (IR) was set in within the device to detect relative north of the magnetic compass. The sensor from IR send the signal to the buzzer. The power supply from battery turn on the circuit and activated the buzzer when facing the desired direction. The circuit of Infrared was a simple circuit and easy to built using low cost of material. The device only require a 5v DC battery with 4 1.5 V AA batteries to power up this device. The devise was design to be user friendly, practical and also easy to be handle

Key-word: - Design, Refrigeration & COP

1. Introduction

The most important and useful instrument used in navigation is compass. The magnetic compass was first invented as a device for divination as early as the Chinese Han Dynasty. The use of a compass is recorded in Western Europe between 1187 and 1202. Prior to the introduction of the compass, position, destination and direction at sea were primarily determined by the sighting of landmarks, supplemented with the observation of celestial bodies. A number of ancient cultures used lodestones, suspended so they could turn, as magnetic compasses for navigation. The compass is use to determine directions and distances, triangulation which is to determine certain location on a map, orient a map (aligning a map with the actual land) as well as to tell which direction an object is from us. Therefore, it greatly improved the safety and efficiency of travel, especially ocean travel. A compass can be used to calculate heading, used with a sextant to calculate latitude, and with a marine chronometer to calculate longitude. For Muslim the main function of compass is to determine the Qibla direction. In 1300, the Egyption astronomer and Ibn Simun describes a dry compass for use as a "Qibla (Kabba) indicator" to find the direction to Mecca. This device not only useful for normal people but also for disable people; blind and blind-deaf.

2. Problem Statement

The compass is a very important tool for navigating people in the middle of nowhere . Anyone wishing to venture into the somewhere else should have a compass and know how to correctly use it. As a Muslim, the compass really needed to navigating the direction of Qibla. Nowadays the magnetic compass is widely use to determine the Qibla direction. However only the person without disability can use the magnetic compass because it was not design for those with visual or hearing disability. The people with visual disability is not suitable to use the magnetic compass. This problem will be the main reason to built and create the device specially design for people with visual disability in order to assist them in determining the direction of Qibla.

3. Objective of Project

The main objective of this project is to improve design and develop a qibla compass indicator for blind people. Therefore, added independence and flexibility to them. The device should be simple, user friendly and practical especially to those with visual disability. The scopes that will be cover with this project are:-

- To understand the concept of Qibla.
- To improve design the Qibla indicator for blind people (visual disability).

4. Methodology

The purpose of this device is to help people with visual disability to determine Qibla direction. Therefore, this design to assist to find the correct Qibla direction. There are 3 initial design of the product. The design focus on the size practical use, cost effective and user friendly. There are a few problems has been encounter during the process of designing the Qibla locator. This part will discuss the problem of the design.

Needle Oscillate

The use of magnetic compass will cause the needle to oscillate for a period of time. To overcome this problem the device must be handle slowly and with. The size of needle also must be fit with the size of casing.

Compass Balancing and Interference

The balancing of compass must be put directly on the flat surface. The reason because the use magnetic compass. The magnetic compass is very sensitive toward induced magnetic field. The design need to take the precaution of anything that can make interference the magnetic compass to make sure the compass are able show the right direction.

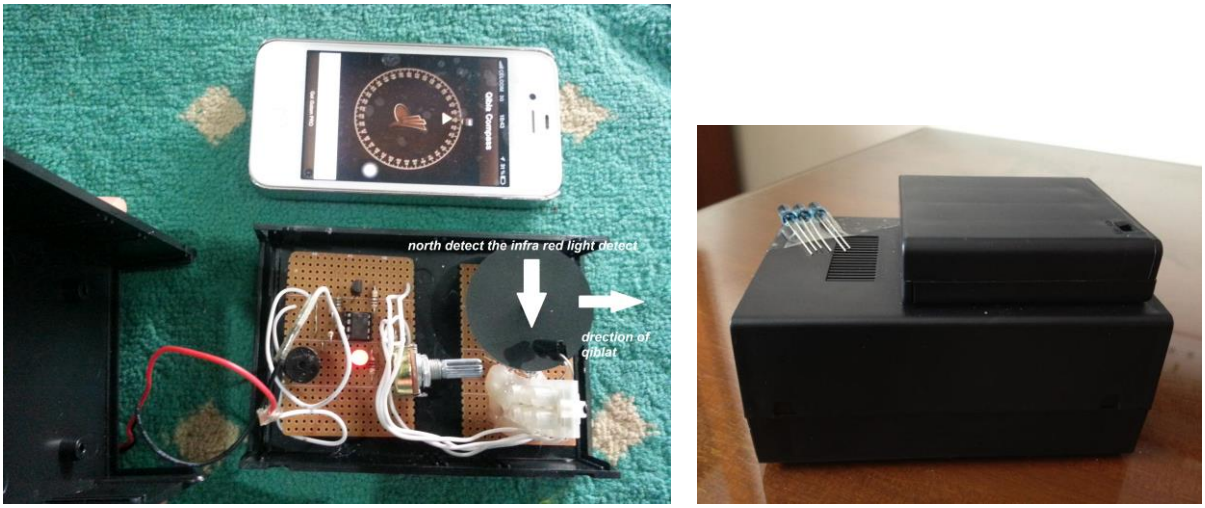
The Size and User Friendly

The design must be small and easy to bring anywhere. The weight of this design must be lighten and easy to use. The important criteria is this product must easy to determine the Qibla. The user of this design is a blind people so they must use the product in easy way and not complicated to use.

North Detection

The main function of the device is to detect the North direction. The modification of the magnetic compass must be made because there are two side of needle that pointing the relative north and the relative south. Therefore the design with only one opening is required. The IR detection from the light source (via the opening) will make the circuit buzz out the signal or Qibla direction.

The design



Picture of product design qibla compass

5. Discussion and Result

The final result of the qibla indicator will review by three concept of design. Overall Review concept. The step of evaluating the criteria of the design is :

a) Identification of assessment criteria
b) Recognize the main factor of each design criteria
d) Listing the table of scoring matrix
e) Give the result of every concept

The score that have a highest mark will detect as a main frame of project scope. The lowest will responsive as a upgrading the gadget later on. The device is beneficial and useful to assist people with visual disability to accurately determine the Qibla direction. The design of the devise is very user friendly, practical and cost effective. The size of the device also just nice to be held by hand. The device must be do some upgrading in order more practical use for blind-deaf person.

All of discussion must be analysis again like a size of compass and size of box Qibla locator. Some changes to reduce more size and weight and easy to use for a blind people.The material of compass need to upgrade for more reliable use. As overall, the Qibla Compass for Blind People is a good device and was fulfilled the objective of this study.

6. Conclusion

The device is beneficial and useful to assist people with visual disability to accurately determine the Qibla direction. The design of the devise is very user friendly, practical and cost effective. The size of the device also just nice to be held by hand. The recommendations for upgrading this design must be made in order to improve the function of Qibla locator. Some of visually impaired people may also have some degree of hearing problem. For future analogue study we suggest to incorporate the device with vibrator tool. Therefore, people with both visual and hearing disability will get the benefit. The sensitivity and accuracy of the device can be affected by light and any source of magnetism or ferrous material. Therefore future design should use 100% light proof material. The gearing system must be made or the mass production will allow the device produce with mass production. This gearing system and use of stepper motor can determine every Qibla location in all over place in the world. The device should be tested in different countries because different countries have different coordinate for Qibla direction.

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