

# CHAPTER 1

## INTRODUCTION

### 1.1. Background

Eyes are the senses that are used to see the state or condition, so that humans can know an object that they see. Not everyone is created with a normal eye condition, there are some who are born with impaired vision. People with visual impairments are called blind people. Blind people have a disability to see, but they can still carry out activities, although it is not uncommon to have to be assisted with tools to simplify and lighten their activities.

Based on the problems above, I will examine the design of blind sticks using technology in the form of Ultrasonic Sensors as Obstacle Detectors, Wemos D1 mini as a Controller, and then the buzzer will sound.

Ultrasonic sensor is a tool that can work based on the principle of sound wave reflection, in this case the time difference between the received and emitted sound waves is directly proportional to the height or distance of the object reflected by the sensor has 4 PINs, namely vcc, trig echo and gnd. Wemos here functions to process all inputs such as ultrasonic sensors, then after the Wemos D1 mini is finished processing it will be sent to the output, namely the application and the buzzer.

## **1.2. Problem Formulation**

Based on the background that has been stated above, it can be concluded that the problems expressed in the writing of this thesis are :

1. How to design a smart stick to make it easier for blind people?
2. How good is the ultrasonic sensor at detecting obstacles?

## **1.3. Scope**

In order to avoid deviations, the main aims and objectives of the preparation are :

1. Stick Design is designed using pvc pipe material.
2. The ultrasonic sensor discussed is only about the HC-SR04.
3. Sticks don't work when it's raining.
4. The vibration caused by using a blind stick does not affect the performance of the sensor.
5. The stick can't detect the gutter.
6. The stick can detect the way down

## **1.4. Objective**

The design and manufacture of this stick aims to make it easier for blind people to carry out daily activities, especially when people are outside the home or doing activities outside the home. But this final project has a drawback because it can't detect the presence of a ditch or not