Indian Institute of Information Technology, Nagpur

Department of Computer Science and Engineering

Project Report On

Blind Stick

Submitted to

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Mentored by

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Member's Contributions(Group 7)

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Contributed in SOS button and Weather detection

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Contributed in road Crossing mode

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Contributed for obstacle detection

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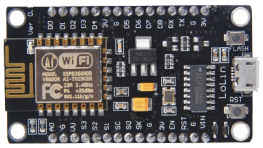
Contributed in Pit detection

Introduction

Navigation has always been a difficult & challenging time for the People with visual impairment. They always have to be more attentive in sensing every movement in the environment than a normal human being. Intermittently they are in danger which can cost their gifted life at few motions like while crossing the road. In many emergency situations they are unable to communicate instantly with their family for taking instant actions. They always feel a need to be accompanied by a helper but it's not affordable for the majority of people.

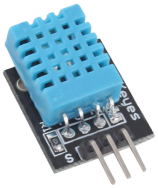
Hardware Used



NODE MCU esp8266

HC-SR04

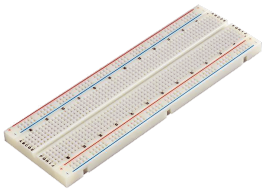
LED



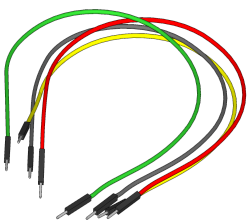
DHT11

PUSH BUTTON

RESISTOR



BREADBOARD



JUMPER WIRE

BUZZER

Working

1. Obstacle Detection

In Obstacle Detection, what happens when a person with a blind stick moves and there are some obstacles in front of him, distance(Ultrasonic) sensor detects that object and alarms the blind person with a beeping sound from the buzzer.

2. Weather Detection

When we press the button for weather detection, what happens is that our temperature and humidity sensors check the outside value and compare with its predefined value and tell the user to go outside or not, like for going outside it will only glow green LED and for not going outside it will glow the red LED and a beeping sound from the buzzer.

3. Pit Detection

Whenever the bat stick detects the pit of some certain depth it will glow the LED with a beeping sound from the buzzer. We can fix the depth of the pit with our requirements.

4. Road Crossing Mode

In road crossing mode, users have to use google assistant by saying "**Ok google activate, Turn on the road crossing mode**" it will turn on the mode and what happens an alarm will be sounding and alert the nearby person to help the blind person to cross the road. To turn off the road crossing mode users have to say to google assistant that "**Ok google activate, Turn off the road crossing mode**" and it will turn off the alarm.

Basically what we are doing is that we are using google home for automation of our device by setting up IFTTT(If This Then That).

5. SOS Message to rescue

When a user will be in danger or critical situation, users have to press the SOS button, which will send the notification in the blynk app and an email to its relative.

Basically we are using blynk to set the event in the blynk cloud and calling the blynk event to send notification and email.

Circuit Diagrams

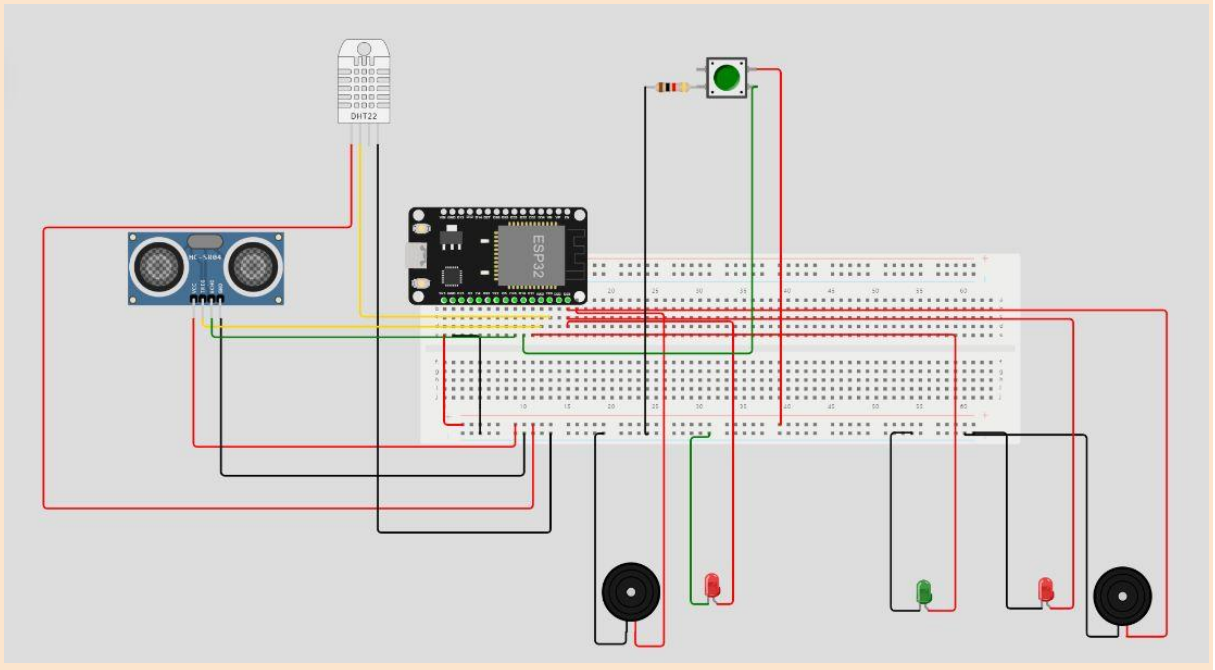


FIG: For obstacel detection and weather detection

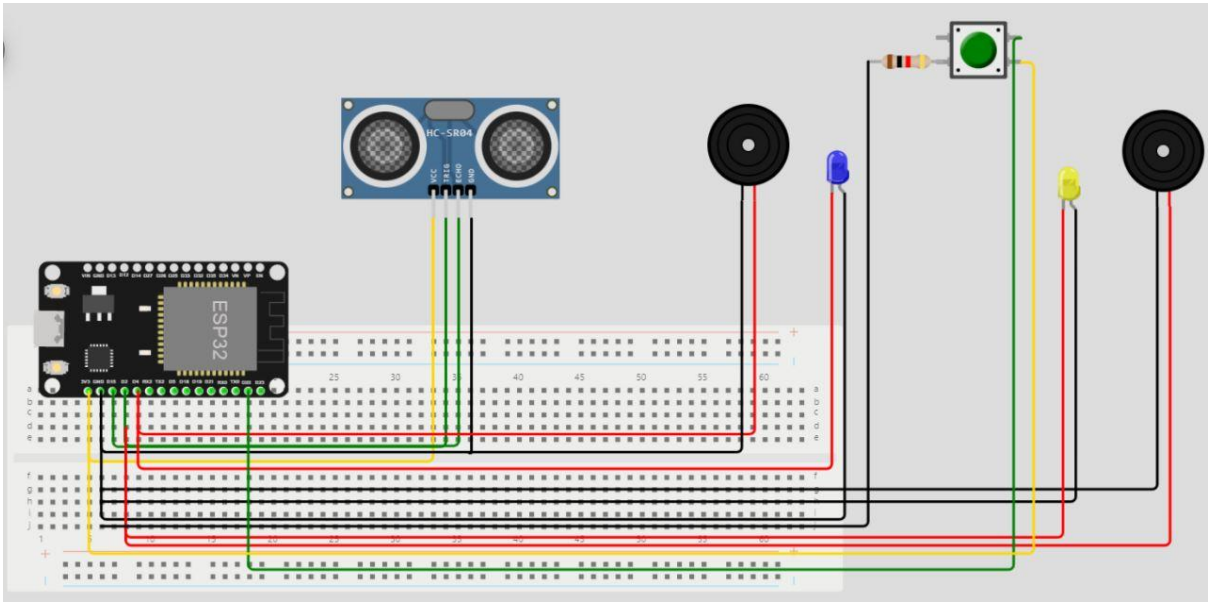


FIG: For pit detection , SOS button and road crossing mode

Platform Used

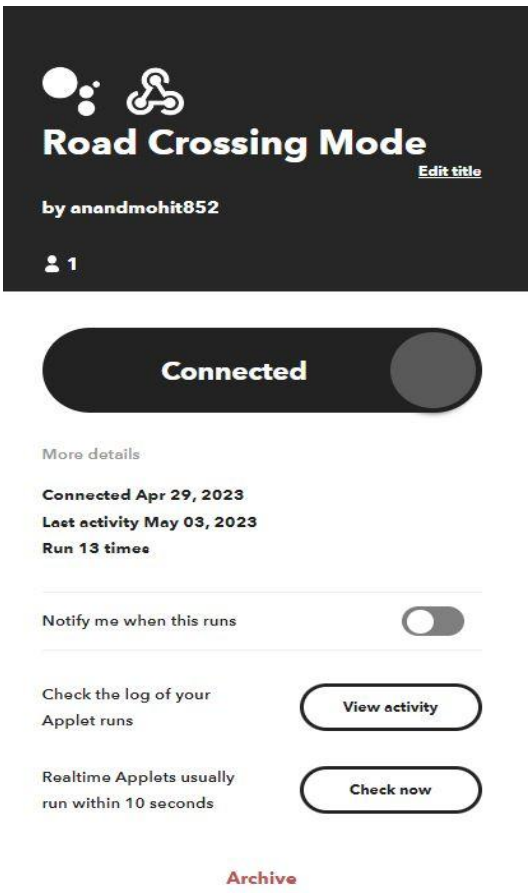
Arduino IDE

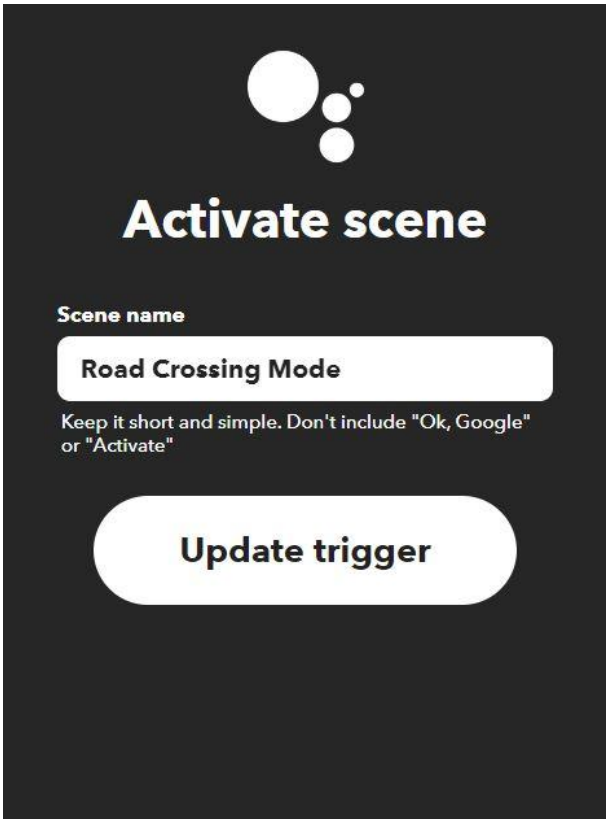
Used for coding the software part and installing the code in NodeMCU

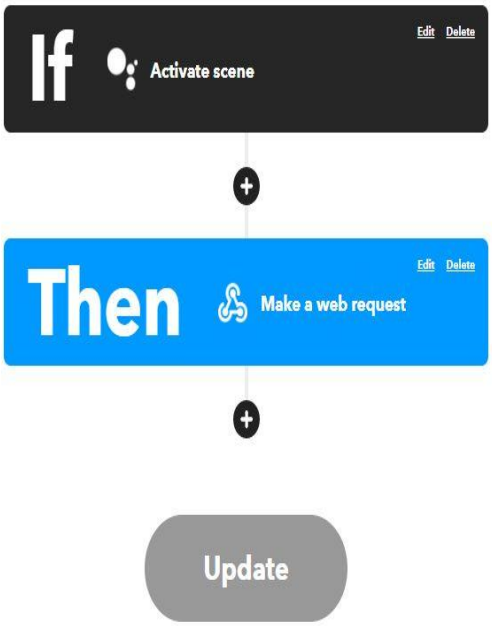
IFTTT (If This Then That)

Used for setting up the commands and connecting google assistant.

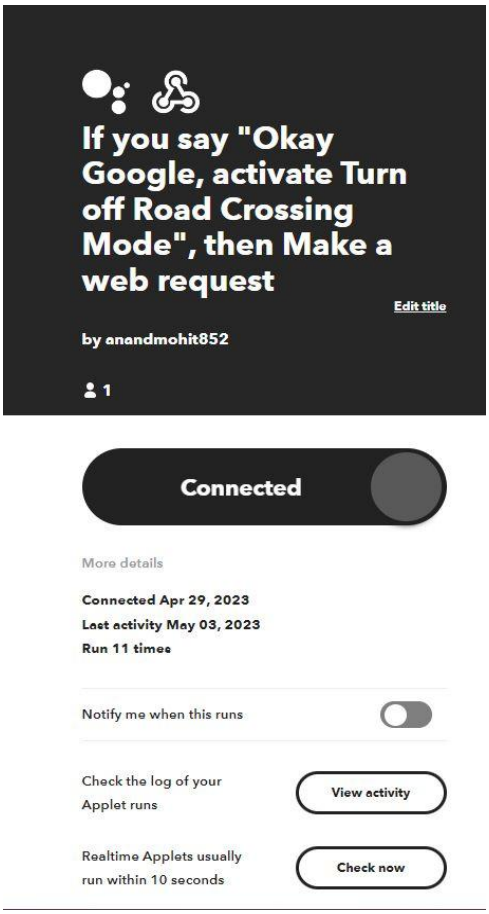
IFTTT setup for turning on the road crossing mode.

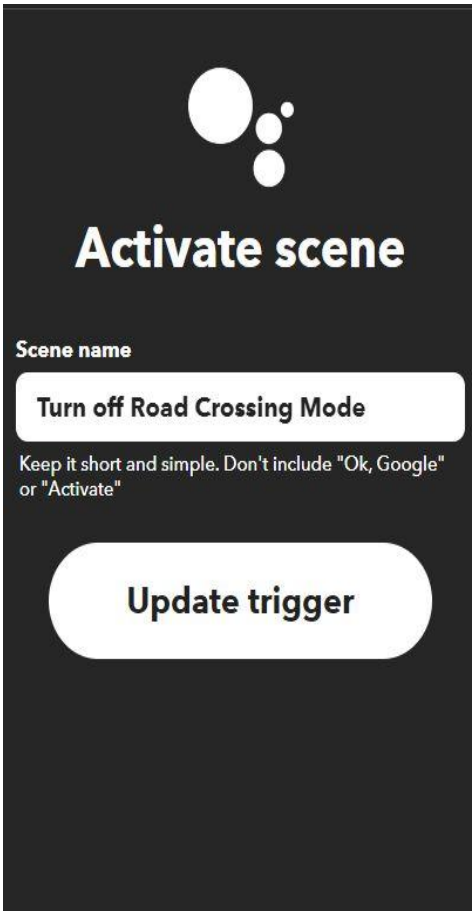


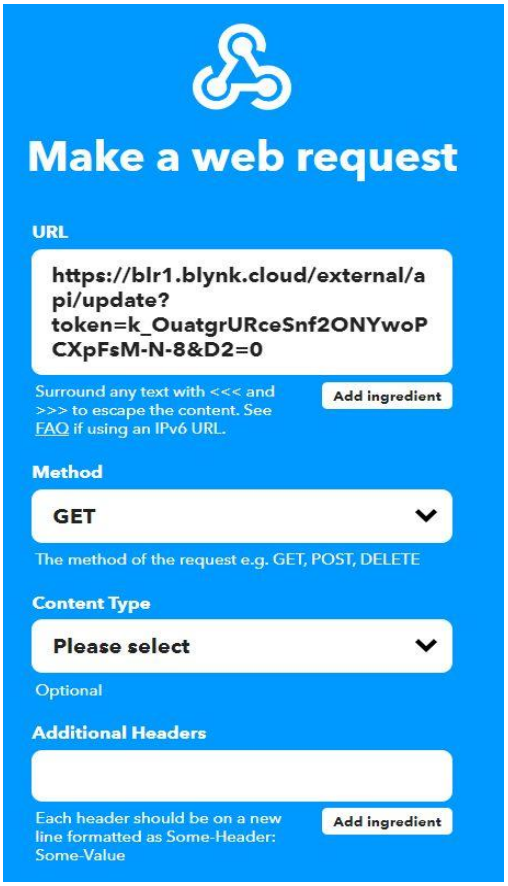




IFTTT setup for turning off the road crossing mode.


If you say "Okay Google, activate Turn off Road Crossing Mode", then Make a web request
Edit title
by anandmohit852
1
Connected
More details
Connected Apr 29, 2023
Last activity May 03, 2023
Run 11 times
Notify me when this runs
Check the log of your Applet runs
View activity
Realtime Applets usually run within 10 seconds
Check now


Activate scene
Scene name
Turn off Road Crossing Mode
Keep it short and simple. Don't include "Ok, Google" or "Activate"
Update trigger


Make a web request
URL
https://blr1.blynk.cloud/external/api/update?token=k_OuatgrURceSnf2ONYwoPCXpFsM-N-8&D2=0
Surround any text with <<< and >>> to escape the content. See FAQ if using an IPv6 URL.
Add ingredient
Method
GET
The method of the request e.g. GET, POST, DELETE
Content Type
Please select
Optional
Additional Headers
Each header should be on a new line formatted as Some-Header: Some-Value
Add ingredient


Want to publish this Applet so anyone can use it? Click here
If
Activate scene
Edit
Delete
Then
Make a web request
Edit
Delete
Update

Google Assistant V2

Used to activate the road crossing mode.

Google Home

Used to activate the road crossing mode and it is used to link google home with google assistant by the help of IFTTT.

Blynk

Used to send SOS messages and email.

Conclusion

After the establishment of this product BLIND-STICK, it can be the revolution for the people with visual impairment. This one stick can change their life by supporting them everywhere, that's what every such person feels to be. But unfortunately every section of society can't afford to keep a helper with them all the time but this product can be the

robotic helper in their life which can stay with them whenever it's needed. But every product has some great advantages and few disadvantages.

ADVANTAGES :-

Reduce the stress for sensing the environment for movement.
Help the user to regain self-dependence and confidence.
Enhance the safety of the user specially during risky moments like crossing the road.
Early detection of wet floors, as they can’t be sensed to prevent from sleeping.
SOS Button can be the life saviour for emergency situations by instant delivering of the Help Message. It can easily switch between the modes with the GOOGLE ASSISTANT while walking.

DISADVANTAGES :-

It can stop Working if not charged properly and used for long.
Navigation signals may be confusing while walking in a crowd.
SOS services and Google Assistant will only work when it is in range of the network.