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Team

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Introduction

This project is a prototype of a smart glasses. The glasses will help blind people to navigate.

Features

1. Describe Environment
    - The application will describe the environment to the user by capturing the image and processing it using the Google's Gemini Vision Pro API.
2. Read Text
    - The application will read the text from the image using Tesseract OCR.
3. Detect Currency
    - The application will detect the currency from the image using the Google's Gemini Vision Pro API.
4. Hey Visio

    - The user can ask anything directly to google's gemini.
    - Basically, send prompts to the google's gemini using the voice.
5. Navigation
    - The application will provide navigation to the user using the GPS module.
6. Temperature
    - The application will provide the temperature to the user using the temperature sensor.
7. Change Volume Controls
    - The user can change the volume of the application using voice commands.
8. Visio Pair
    - A mobile application to pair with the smart glasses to provide additional features.
    - The mobile uses BLE to connect with the smart glasses and send wifi credentials to the smart glasses. and update setting of the smart glasses.
9. Visio Alley
    - A mobile application for user's family to track the user's location and provide additional features.

Hardware

The hardware used for this project is the following:

- Raspberry Pi 3 Model B
- Raspberry Pi Camera Module V2
- Touch Sensor

Pin Configuration

The pin configuration is the following:

1. Camera Module
    - Camera Module V2 Slot in Raspberry Pi 3 Model B
2. Touch Sensor
    - Pin 1(IO): GPIO 17
    - Pin 2(VCC): 3.3V
    - Pin 3(GND): GND
3. GPS Module
    - Pin 1(VCC): 5V
    - Pin 2(RX) : TXD
    - Pin 3(TX) : RXD
    - Pin 4(GND): GND
4. Temperature Sensor
    - Pin 1(VCC): 5V
    - Pin 2(DATA): GPIO 27
    - Pin 3(GND): GND

Software

Installation

1. Install Raspbian on Raspberry Pi 3 Model B
    1. Download Raspberry Pi Imager from Raspbian
    2. Create a bootable SD card using Raspberry Pi Imager
2. Install Nodejs on Raspberry Pi 3 Model B

```
sudo apt-get update
curl -sL https://deb.nodesource.com/setup_20.x | sudo -E bash -
sudo apt-get install -y nodejs
```

3. Install sox on Raspberry Pi 3 Model B

```
sudo apt-get install sox libsox-fmt-all
```

4. Clone this repository on Raspberry Pi 3 Model B

```
git clone https://github.com/vakhariaheet/Smart-Glasses
cd Smart-Glasses
npm install
```

Usage

1. Run the following command to start the application

```
npm start
```

2. Trigger the touch sensor to test the application

References

- Raspberry Pi
- Raspberry Pi Camera Module V2
- Raspberry Pi Imager
- Nodejs
- Configuring Wifi and Bluetooth in Raspberry PI