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Berkeley | EECS
Electrical Engineering and Computer Sciences

VISION++

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Goals

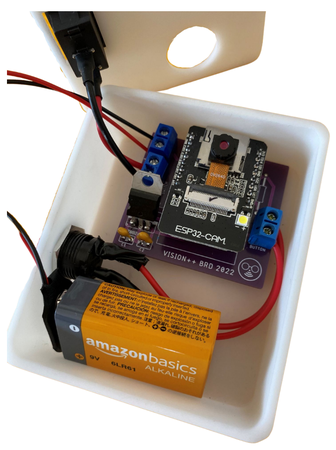
VISION++ seeks to **empower low vision** people by providing them a **glove that can turn any text into speech**.

Take a photo with the press of a button

“STOP”

Hear detected speech in a Smartphone App

What is in the glove and app?



The glove includes an **ESP32-CAM** development board, which includes a wifi module, an **OV2640 camera**, an easy to replace **9V battery**, and a button.

The app **allows the user to select a language, speech rate and pitch.**

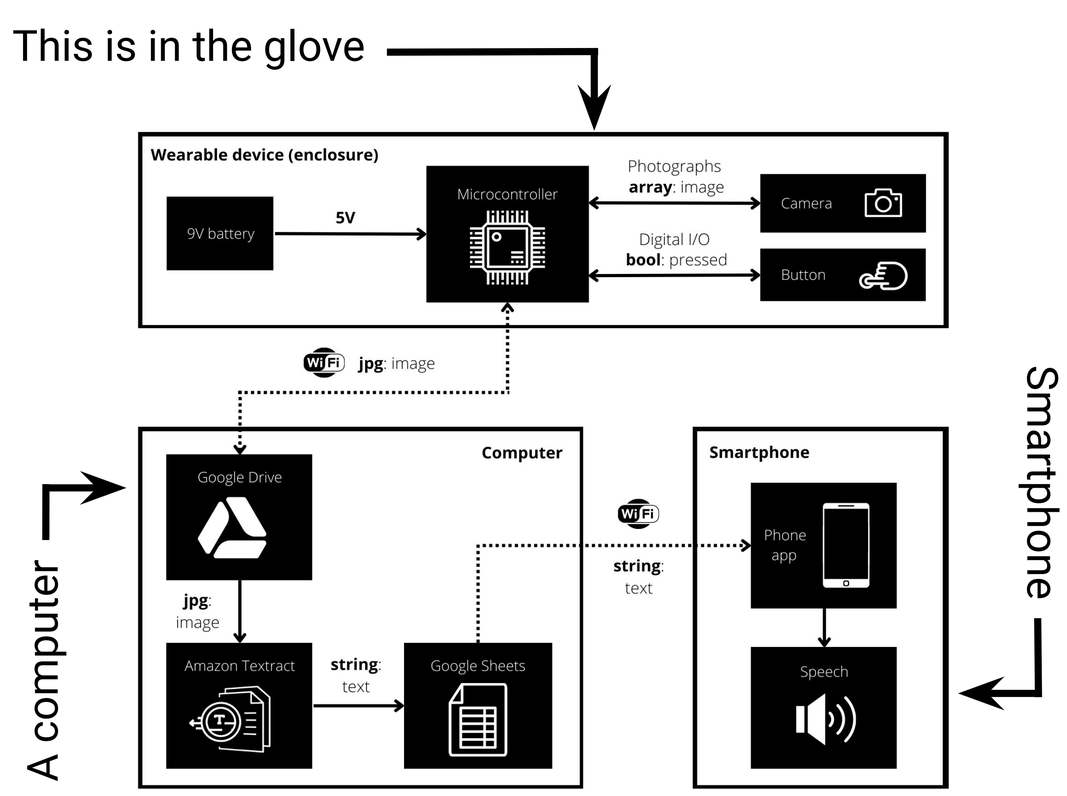
How can I use it?

1. **Enable** your phone’s **hotspot**.
2. **Turn on device** and wait for it to connect to the network.
3. **Ready to use!**

Now, **press the button** and **hear the speech**

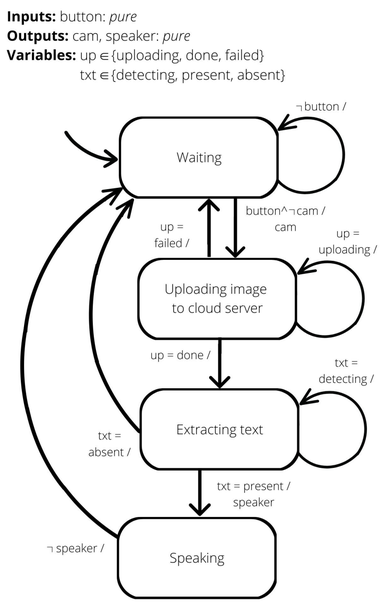
Project architecture

The following diagram shows the communication between the different parts that make up the project.



- The glove **captures an image** and **uploads it to Google Drive** through WiFi
- A **computer downloads it**, **extracts the text** with AWS Textract, and **uploads it to a Google Spreadsheet**
- The smartphone **app** turns the **text into speech**

Behavior of the system



The following **state machine** displays the behavior of the **entire system.**

The only **input** is the push of the **button**, and the **speaker** of the phone and the **camera** of the glove are treated as **outputs**

Customized PCB

A **custom PCB** was designed to **minimize the** physical **use of space** in the glove. It connects a **voltage regulator** to the ESP32-CAM board, and drives a **GPIO pin to GND when a button is pressed**