TrueVision

A Sign Language Recognition and Speech Synthesis Device

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Problems faced:

- Communication barrier between individuals who use sign language and those who do not understand it.
- Difficulties for hearing/speech impaired individuals in professional settings such as hospitals and banks.

Objective:

To bridge the communication gap for individuals with hearing and speech impairments by developing a device that:

1. Recognizes sign language.
2. Converts sign language into speech.

USE -CASE

A patient visiting a Doctor's Clinic for consultation

1. Doctor has the smart device for communicating with the patient.

Here ,Doctor is the primary user of the device.

2.Patient Communicates with the device via the camera.

Here,,Patient is the secondary user of the device.

List Of Dialogue Patients Use for communicating

What is causing my symptoms?

What are the risks and side effects of the treatment?

How long will it take to recover?

Are there any lifestyle changes I need to make?

What tests do I need to undergo?

How should I take my medication?

Are there any alternative treatments available?

What can I do to prevent this condition from recurring?

What are the treatment options?

I have a persistent headache.

I feel very tired all the time.

I am experiencing chest pain.

I have trouble breathing.

I feel dizzy and lightheaded.

I have a sharp pain in my abdomen.

I feel nauseous and have been vomiting.

I have a constant cough.

I am experiencing joint pain.

Communicate the location, intensity, and type of pain

Feature Specification

The device is expected to achieve the following :

1.It uses a camera that captures the hand sign gestures .

2.It displays the speech output through a speaker.

3.Interface App:

The app displays transcript of detected sign language. Can also translate the transcript into different languages.

ESP-32 microcontrollers

RandomNerdTutorials.com
ESP32-CAM
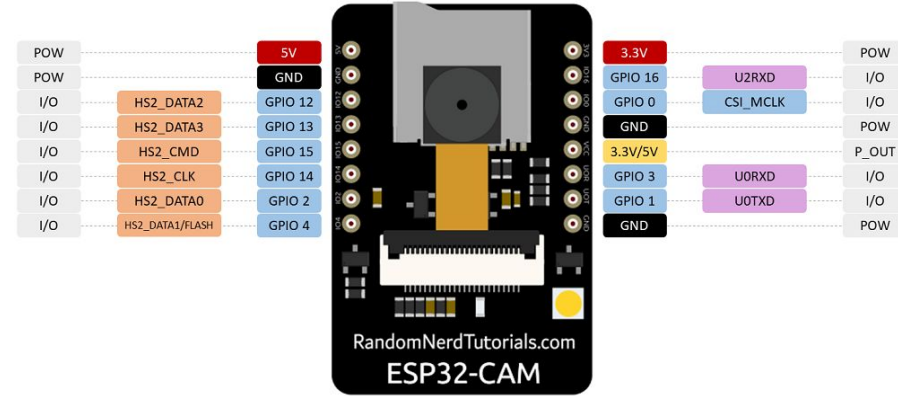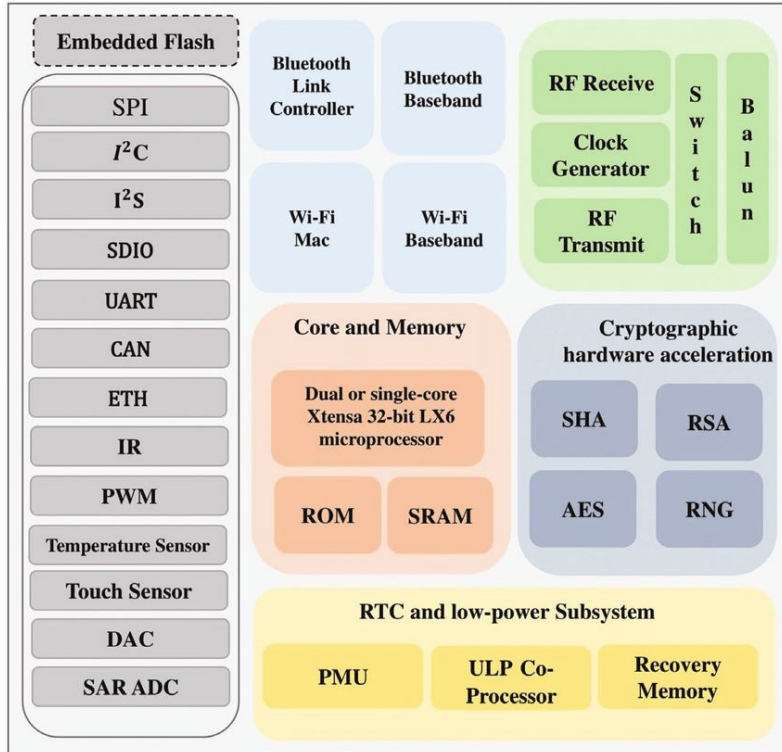
- Xtensa single-/dual-core 32-bit LX6 microprocessor(s)
- Supports single-precision Floating Point Unit (FPU)
- Wi-Fi: 802.11 b/g/n
- Bluetooth: v4.2 BR/EDR and BLE
- 34 × programmable GPIOs
- 12-bit SAR ADC up to 18 channels
- 2 x 8-bit DAC

BLOCK DESIGN
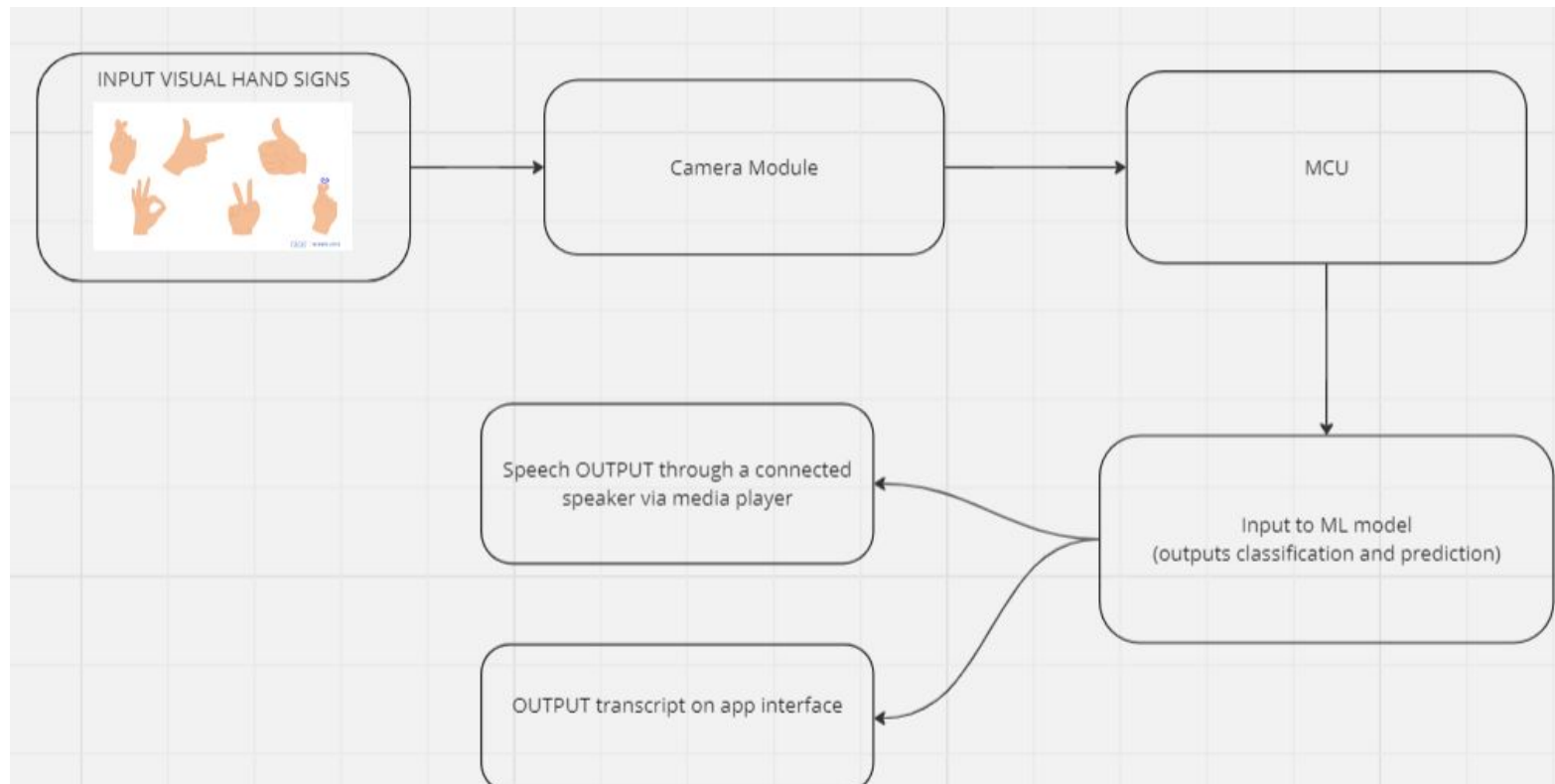
ESP 32 Cam module

WiFiClientSecure
(uses local
network)

Mp3 media module

Speaker

esp8266

Progress of Poc

1.Identified the probable use case of the product - the doctor and the patient . Also ,the probable list of dialogues that can be performed by the deaf patient.

2.identified the list of components that are required for this project.

Tentative Plan

- Create prototype
- Test it with real life situations in regard to the use-case
- Design an app for the interface
- Design look for the end product.

Thank You!