**OpenCV based Sign Language Translator**



**Team Name: Visionaries**

**Team Members:**

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A 4th year Computer Science Dual Degree student with a knack for CV

***Projects:***   
**Social Distancing Measure** : A program that detects humans and the distance between them using user-defined Machine Learning algorithms and estimates if they are following social distancing protocols or not.   
Tools used : Python

**CS50 AI Mini projects :**  
Python Modules used : cv2, csv, tensorflow, nltk   
Link : [Click here](https://github.com/dhyutin/CS50AI-Projects)

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An enthusiastic 4rth year Computer Science Dual Degree student.

***Projects:***

**Emotion Detector** : Used CNN to detect live emotion of a human face.

**Stock price prediction** : Used ML algorithms and descriptive statistics on past data to predict future stock price.

**Problem Description:**

Over 5% of our global population, i.e, 432 million adults and 34 million children have hearing disability. One of the major difficulties faced by deaf people is their ***means of communication*.** Not everyone around the world is aware of [sign-language](https://en.wikipedia.org/wiki/Sign_language). Although many services are deaf-people-friendly, like provision of running subtitles in cinemas, providing written instructions near shops, etc, there are not many services available that put in efforts to understand what the deaf people want to convey.

In order to cater to the needs of deaf people and help them communicate better, there is a surging need for a mobile-sign language translation service which is handy.

**Brief Solution:**

Our main aim is to facilitate the process of sign language to English translation by use of various ML algorithms and models.

According to us,

**Our Input** is a *video (live or recorded) of a person communicating in sign language.*

**Our Output** will be *English Text* corresponding to the translation of what the person said.



Input image reference: <https://babysignlanguage.com/dictionary/hello/>

There are 4 major steps to facilitate the following:

1. Image Preprocessing
   1. Extract frames from the video and run the frames through certain preprocessing filters to prune unwanted data
2. Identification of human hand
   1. Using either available modules like *mediapipe* or building our own functions
3. Train a CNN to identify hand gestures
   1. The CNN architecture will be designed based on various logical and experimental iterations
   2. Aim here will be to attain maximum accuracy
4. Translation of the hand gestures into meaningful English sentences
   1. Modules like NLTK will be used to train the model to translate the data into meaningful english sentences