

Project Presentation on Sign Language Recognition Using Hand Gestures

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INTRODUCTION

Sign language recognition is a collaborative research area which involves pattern matching, computer vision, natural language processing, and linguistics. Its objective is to build various methods and algorithms in order to identify already produced signs and to perceive their meaning. There have been a few progressions in innovation and a great deal of examination has been done to help the individuals who are tragically challenged. Helping the reason, Deep learning can be utilized too to have an effect on this reason.

This can be extremely useful for the not too sharp individuals in speaking with others as realizing communication through sign isn't something that is normal to all, in addition, this can be reached out to making programmed editors, where the individual can undoubtedly compose by their hand signals. Project Overview: In this communication via gestures acknowledgment venture, we make a sign identifier, which distinguishes numbers from 1 to 10 that can without much of a stretch be reached out to cover a huge large number of different signs and hand signals including the letters in order. We have built up this venture utilizing OpenCV, Keras and Tensorflow modules of python.

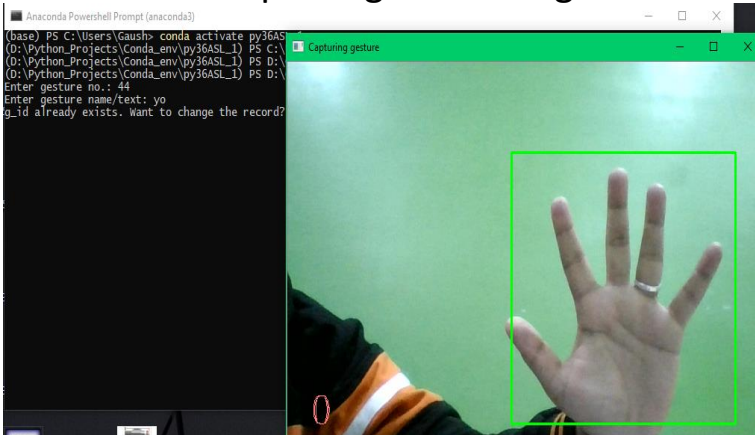
PROBLEM STATEMENT

To design a real time software system that will be able to recognize hand-gestures using deep learning techniques and that will help us to understand the meaning of deaf and mute people who uses sign language for communication

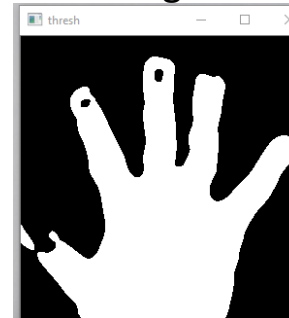
DATASET

- We have created our own dataset
- We captured the RAW image and converted it to Histogram

Capturing RAW image



Histogram



Tools/Methods (Frontend,Backend, Classification methods, etc.)

- **Python 3** - Programming language
- **OpenCV** - OpenCV (Open Source Computer Vision Library) is an open source computer vision and machine learning software library.
- **Tensorflow** - TensorFlow is an end-to-end open source platform for machine learning. It has a comprehensive, flexible ecosystem of tools, libraries and community resources that lets researchers push the state-of-the-art in ML and developers easily build and deploy ML powered applications.
- **Keras** - Keras is a deep learning API written in Python, running on top of the machine learning platform TensorFlow. It was developed with a focus on enabling fast experimentation. Being able to go from idea to result as fast as possible is key to doing good research.
- **Method**
 - We will be using Convolutional Neural Network (ConvNet/CNN) it is a Deep Learning algorithm which can take in an input image, assign importance (learnable weights and biases) to various aspects/objects in the image and be able to differentiate one from the other. The pre-processing required in a ConvNet is much lower as compared to other classification algorithms.

IMPLEMENTATION AND SPECIFICATION

- We captured the RAW image and converted it to Histogram
- A Region of Interest(ROI) has been set where one can bring his hand and make the hand signs
- The trained model than try to predict the hand signs

Thank You