Hand Gesture Recognition

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CERTIFICATE

This is to certify that the report entitled "**Hand Gesture Recognition**" is a bonafied work carried out by **Mr. Nihal Patel (16IT086), Mr. Dhaval Vaghela (16IT141), Mr. Parth Sonagara (16IT132)** under the guidance and supervision of **Prof. Ravi Patel, Prof. Hemant Yadav** for the subject **Software Group Project-II(IT345)** of **5th** Semester of Bachelor of Technology in **Information Technology** at Faculty of Technology & Engineering – CHARUSAT, Gujarat.

To the best of my knowledge and belief, this work embodies the work of candidate **himself** has duly been completed, and fulfills the requirement of the ordinance relating to the B.Tech. Degree of the University and is up to the standard in respect of content, presentation and language for being referred to the examiner.

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Abstract

Hand gesture recognition system is used for interfacing between computer and human using hand gesture. We are going to implement a system that recognizes Gesture input using webcam & performs the Specified Operation.This is very useful for a hands-free approach. It is useful in media player. A simple gesture could pause or play the movie or increase the volume even while sitting afar from the computer screen. It follows hand free approach. So, one can easily control this from long distance.

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Chapter 1: Project Definition

- Hand Gesture Recognition is a project that recognizes gesture.
- This system is used for interfacing between computer and human using hand gesture
- It recognizes gesture using webcam and performs specified operation such as the volume decreases by recognizing 2 fingers and the volume increases by recognizing 4 fingers
- Hand Gesture Recognition system is a computer vision concept which is based on Machine Learning

Chapter 2: Objectives

- The objective of this project is to create a desktop application which recognizes gestures of hand which reduces human effort while interacting with some media player.

- The objective is to combine Computer Vision library OpenCV and a Machine Learning to create a Gesture Recognition system.

- Gesture Recognition is a hand free approach so one can easily control this from a distance

Chapter 3: Software and Hardware Requirements

- **Software Requirements:** Python Tool
  OpenCV library

- **Hardware Requirements:** 512 MHZ or more processor
  512 MB RAM
  GPU would be great so that the processing of the program will be faster

Chapter 4: Major Functionality

- This is very useful for a hands-free approach. It is useful in media player. A simple gesture could pause or play the movie or increase the volume even while sitting afar from the computer screen.

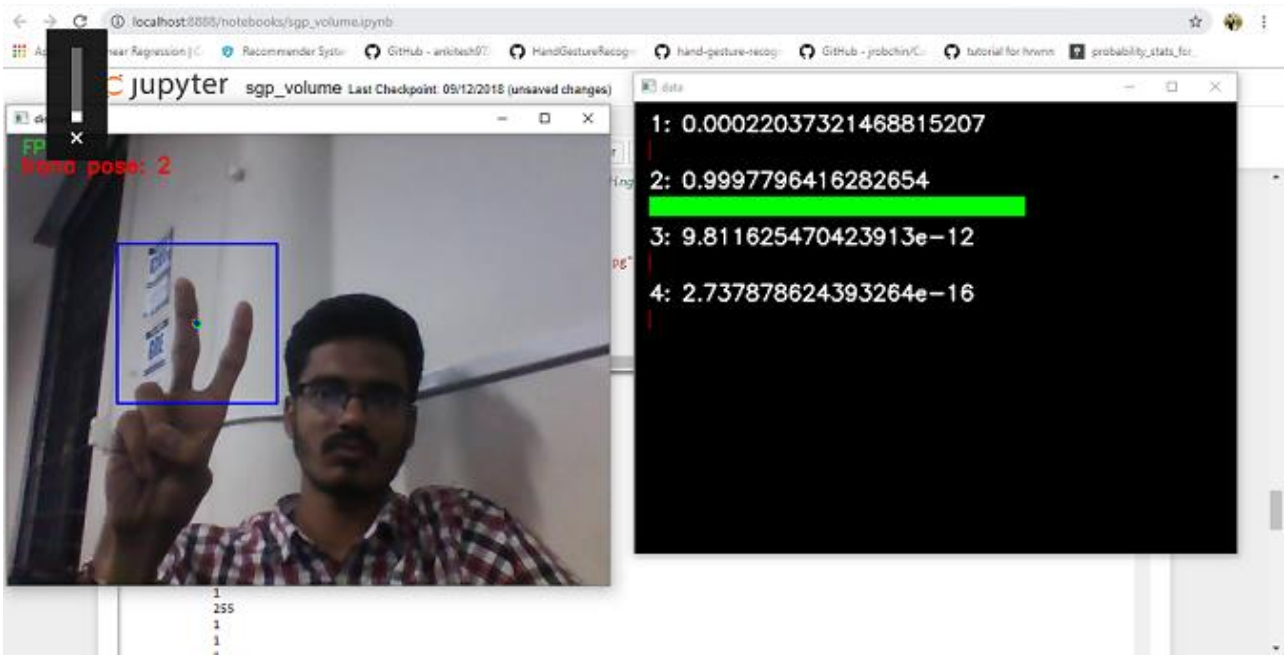
- It is an approach to recognise the gestures without using sensors.

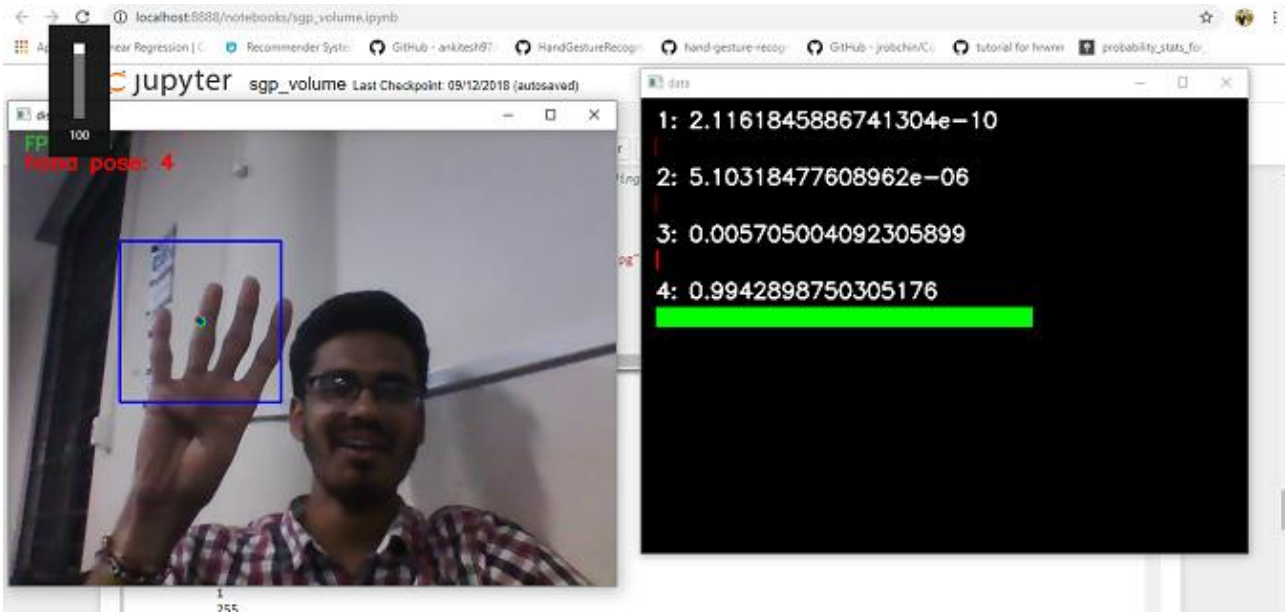
- We can decrease or increase the volume of the media player by recognizing the hand gestures

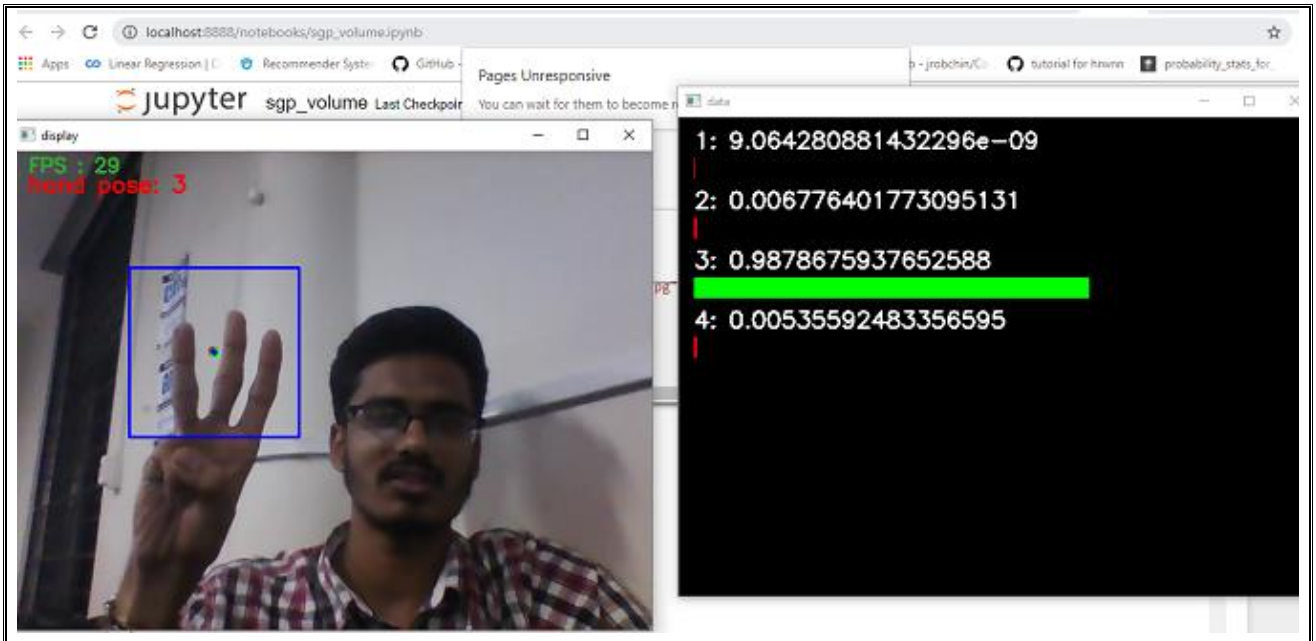
Chapter 5: Implementation Strategy

- We are going to implement a system that recognizes Gesture input using webcam & performs the Specified Operation. For taking input from webcam we use OPENCV in python. Then we are going to implement neural network in python for recognizing the web-Cam input and initialize some specific task to this input.

Chapter 6 : Screenshots of project output



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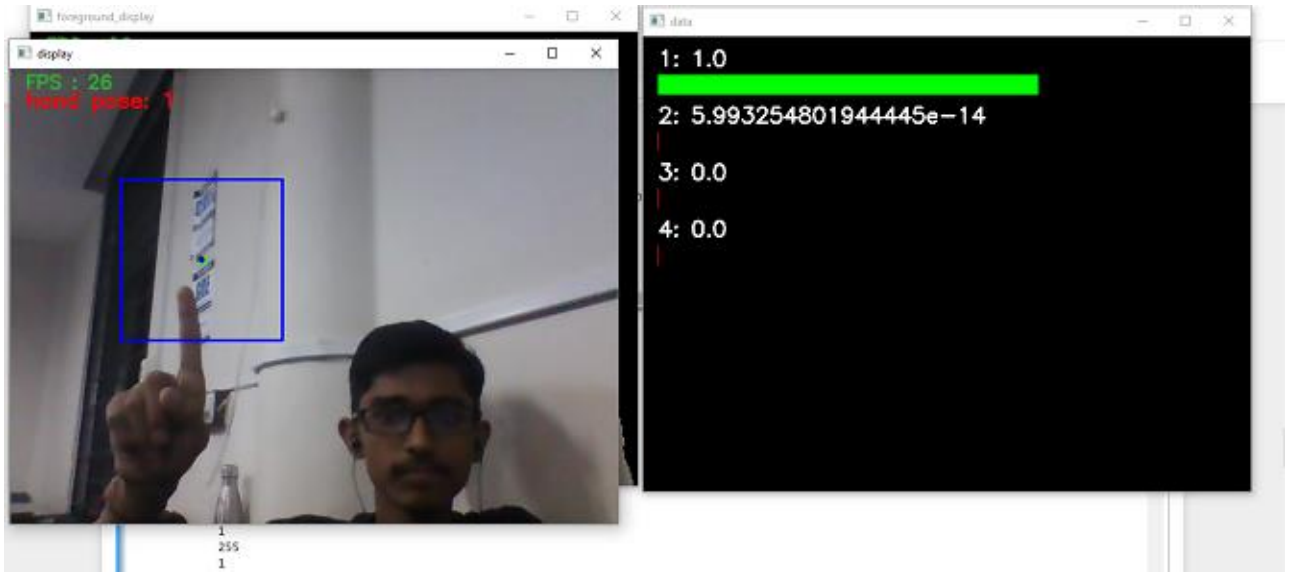
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Chapter 7 : Limitations of project

- The major limitation of this project is when there is a more or less light or even when the running fan comes under the frame of recognizing fingers, the application stops when such problem arises.
- Till now, we have only limited number of gesture recognition pattern which only recognizes only 1 and 4 fingers.

Chapter 8 : Outcome

- From this project we can easily increase or decrease the volume without using hand.
- It is a hands free approach which keeps human tasks simple.

Chapter 8: Future Enhancement

- We are going to implement desktop application by generating exe file .
- In future we will implement a system through which we can control the mouse pointer through hand gesture.

Chapter 9: References

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