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#153161

BSCS 7TH

PROJECT PROGRESS REPORT

SEPTEMBER ➔ NOVEMBER

FP – 1

THE SIGN0 ➔ TH E SIGN OPERATOR

SUPERVISOR: DR. KALEEM RAZZAQ MALIK

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Introduction:

Title: SignO: The Sign Language Interpreter & Translator

GITHUB REPOSITORY

https://github.com/senseiumar/so

What it does?

Reads images and frames from videos in Realtime and converts them into word and phrases / commands that the user or system can easily understand.

It acts as a medium for communication between those in need such the deaf & dumb. And a s a medium to communicate with the system in use such as commands for moving the cursor with gestures or commands to do some other activities on the computer/pc.

Phases

The project itself is divided into 7 big phases out of which 3 have been started and are underway. the details of the phases are as follows:

1. Experimentation & Learning
2. Basic Model
3. Advanced Model
4. Creating dataset
5. GUI & UI
6. Finalizing Docs & Log
7. Complete Product (Finalization)

Hardware & Software Info

Hardware:

1. HP Laptop with 8GB RAM & core 1.5 Processor
2. A 14.1 MP Webcam for better visual experience

Software:

1. Python 3.7 (Former python 2,7)
2. OS Windows (Former OS Ubuntu Linux)
3. OpenCV 3.0 (Former OpenCV 2.0)
4. Pycharm 2018.2 (Former Pycharm 2017.

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Libraries and Packages

The following libraries & packages have been meddled with and experimented with to fit the conditions of the project. The selected ones that are being used are also mentioned below:

1. Python Magick
2. Mahotas (Numpy & C++)
3. OpenCV 2
4. OpenCV 3
5. PIL
6. PILLOW
7. PyCairo
8. Simple ITK
9. Har Cascading
10. copy
11. math
12. numpy
13. time

Sample Projects + Tutorials

Many sample project and code snippets were viewed and applied to meet the goal.

Video and Text based tutorial were taken into accord.

(all available at the github repository)

Experimentation

I worked with different operating systems and different versions of the libraries and the packages to get better results.

1. OS UBUNTU ➔ OS WINDOWS
2. PIL ➔ PILLOW ➔ PIL (Latest)
3. OPENCV 2.0 ➔ OPENCV 3.4
4. PYTHON 2.7 ➔ PYTHON 3.7
5. PYCHARM 2017.4 ➔ PYCHARM 2018.2

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Current Situation & Model

Currently a basic outline, likely simple, code has been generated in which a frame has been set, which sets a background as the initial frame & when a hand is brought into the frame it recognizes it by subtracting it from the initial frame.

It applies the threshold and blots the hand from the frame in realtime.

Currently the program plots the gaps between the fingers and outlines the whole hand with a red line.

The Next Step

The next step is to make an advanced version of he current program that:

1. recognizes symbols and gestures.
2. create a GUI & a UI that is user friendly and easy to use.
3. Try to make it OS independent

LOG & Documentation

The logs are being maintained in soft form and updated on the GITHUB repository.

CONCLUSION

The SignO project is ever-growing and a work in progress. The project is achievable and being modified everyday with new lines of code.

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