SmartHome Gesture Control Application
Part 2
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CSE 535 Mobile Computing Fall 2021

Problem Statement:

To develop a Python Application for hand gesture recognition. This project involves training and testing a CNN model and aim is to recognize various gestures used.

To use: Practice gesture videos generated in Project Part 1, Test Gesture Videos provided in the test.zip in the instructions and the source code provided.

Libraries:

- Scipy
- Glob
- Cv2
- Numpy
- Os
- Math

Technology Requirements:

- TensorFlow
- Python 3.6.9
- OpenCV for Python
- Keras

Approach and Solution:

- Training set is the 51 gesture videos that were made in the previous phase of the project, three videos each of the seventeen gestures provided. Start by installing all the necessary libraries and keeping all the test videos in the 'test' folder and 51 generated videos from part 1 in the 'traindata' folder.

- Generate the penultimate layer first for training data and then for test data by firstly extracting the middle frames and for every data(video), we extract one frame.

- Feature vector set for each frames in traindata and test folders are saved in 'training_vector.csv' and'test_vector.csv'

- We compare the test vector with the train vector to get the most similar gestures. For measuring similarity, we use the cosine distance and then find the corresponding gesture with the least distance.

- Gesture numbers are saved to Results.csv