Smartphone Gesture Control Application

Sai Madhuri Molleti (1218593116)
CSE 535 - Mobile Computing

Problem Solving Approach

Since I had no previous knowledge of using OpenCv, I spent time on understanding it, as well as how color images could be converted to gray scale.
I have little knowledge of Machine Learning which helped me develop a basic idea and work on it.The training data and test data had to be handled in such a way that the accuracy could be improved.The gesture had so much information related to it, so I decided to create a class which could hold all the data of a gesture.
Instead of using the middle frame of the video, using a different frame for test and train data produces better accuracy.
I have tried many cosine similarity implementations for improving the accuracy and ended up using the keras one.

Description Of Solution

The train data has the 51 videos that I have recorded as a part of the Assignment 2 , which includes 3 videos each of every gesture.The expert gestures provided previously are also used to train the model.The gestures are namely 0,1,2,3,4,5,6,7,8,9,FanDown, FanUp, FanOff, FanOn, LightOn, LightOff, SetThermo.
The solution uses the feature matrix derived from each frame to predict the gesture in the test data.A frame from each train video is extracted and stored as an image in the trainout file.
The given CNN classifier is used to obtain a feature matrix from the train data. The same steps are followed for test data as well.
We calculate the cosine similarity and assign true if the value is minimum.Once all the results and labels are obtained, they are stored in the results.csv .