Project Report: SmartHome Gesture Control Application - Part 2

Introduction:

The SmartHome Gesture Control Application aims to enable users to control various home devices using hand gestures. In this part of the project, we focus on determining specific gestures from provided gesture videos. This report outlines the methodology and results.

Methodology:

Preparation of Training Set:

- The training set from Part 1 is utilized to prepare a feature vector set for all videos.
- For each video:
    - The middle frame is extracted.
    - Feature vectors are extracted for the middle frame image using a provided CNN model.
    - The feature vectors are consolidated along with their corresponding gestures.

Gesture Determination for Test Data:

- Test data gesture videos are analyzed to determine the gestures using cosine similarity with the testing data vectors.
- For each test video:
    - The middle frame is extracted.
    - Feature vectors are extracted for the middle frame image using the provided CNN model.
    - Cosine similarity is applied against the testing vector set to determine a vector with the minimum cosine difference.
    - The output label of that vector is fed into the `results.csv` file.

Results:

- The project was successful in capturing frames from videos.
- Implemented the cosine comparison.
- The accuracy of the output could have been higher.