CSE 535 Final Exam Report

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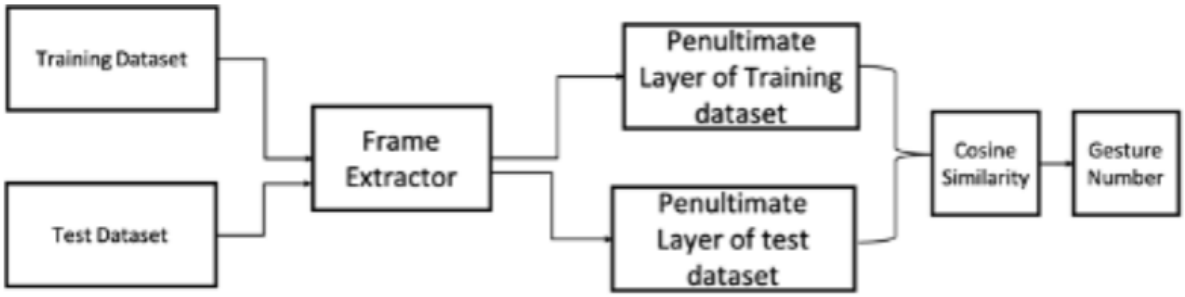
- An explanation of how you approached the given problem



First, I will complete our project step by step according to the flow chart in the report. I first defined a feature_extractor method in main.py, and then in this method, the main function is to intercept each frame in the video, and then we convert the image to gray style, and then call the method in handshape_feature_extractor to extract the features of the image Value, and then save it to the label. We use the above methods for both test and train to extract the feature value of the middle frame of each video in the training set and the test set. Then I used the keras.losses.CosineSimilarity and spatial.distance.cosine methods in Tensorflow to compare the feature values that have been saved in test and train, and finally through the comparison, the different pictures were classified, and the pictures in the test belonged to Type, and then we finally save the result to result.cvs.

- Solution for the problem

Problem 1 : When submitting the code to Gradescope, and my code cannot run.
Solution 1 : Because of the compatibility issue of the Tensorflow version, I kept submitting my code, but the test failed many times. In the end, I used spatial and CosineSimilarity to compare feature values, which solved the problem that my code could not run in Gradescope.

Problem 2: Try to solve the problem of using the __bound_box method to reduce noise in the picture.

Solution 2: Because there is always background noise in our video, the arm is also a piece of interference information for the picture we intercepted, so I tried to intercept a small area at the center of the picture to reduce the impact of the arm on us. Modify the __bound_box Method and call it in extract_feature.

Problem 3: After the code is successfully run in Gradescope, the accuracy rate is very low.

Solution 3: Try to adjust the screenshots in __bound_box to continuously adjust, try to intercept videos that only contain gestures, but the accuracy rate is not much improved.