EECS 6889 Large Data Streaming Processing (Spring 2018) Project Proposal

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Project Title

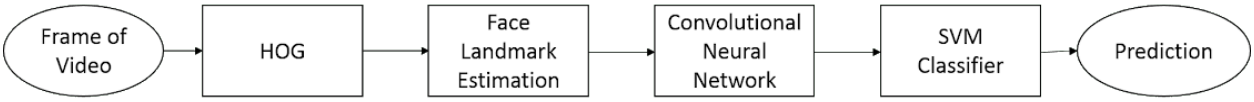
Real Time Face Recognition Streaming System

Dataset

We mainly use *Movie Trailer Face Dataset* which contains 113 movie trailers from YouTube of the 2010 release year. To supplement the dataset we will also be using *PublicFig+10* dataset, containing images of celebrities.

Approach

System: Streams
Algorithm:



We will train all the machine learning operators off-line and only use for on-line prediction. CNN(tensorflow torch) + SVM(sklearn): CNN is to extract features from the preprocessed images and SVM to do the classification.
After repeating this step millions of times for millions of images of thousands of different people, the neural network learns to reliably generate 128 measurements for each person.

Optimization: We will try different optimization methods on the system, such as data parallel or task parallel. We will try adding a feedback operator to help faster locate the face in the next frame, assuming the face locations does not change abruptly from one frame to another.

Expected Results

Creating a streaming system that can detect human faces in real time. The quality of the system will be measured by the detection accuracy and system latency. The detection accuracy will be measured by the ratio of the detected area within the bounding boxes.

Novelty

- Create a real time face detection pipline system
- Test streaming system optimizations on the system
- Try adding a feedback operator to speed up the detection process for the next frame

References

[1] Dataset: *http://enriquegortiz.com/wordpress/enriquegortiz/research/face-recognition/video-face-recognition/*
[2] One Millisecond Face Alignment with an Ensemble of Regression Trees. V. Kazemi, and J. Sullivan. CVPR, page 1867-1874. IEEE Computer Society, (2014)