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Computer Vision Project Interim Report

The goal of the project is to detect the human expressions given an image or video feed. This Kaggle data set challenge aims to detect the expressions of humans from 7 categories of the expressions. The data set is labeled with the expressions of the each face. All the face images are processed for only gray-scale images and centered with a size of 48 X 48. The data set is taken from the [Kaggle competition](#).

The Plan for the project is to use the Deep Neural Networks and the Convolutional Neural Networks to classify the expression of the image. Since the CNN can capture the spatial information of an Image, I believe CNN can definitely perform better compared to the DNN. I have experimented the techniques Logistic with Soft Max and ANN or Deep Neural Network with soft Max. I will be working on keras to implement the CNN.

Project Progress:

1. Logistic regression – [Phase 1]
2. Deep Neural Networks – Back propagation - using both Python and TensorFlow [Phase 2]
3. Convolution Neural networks – using Theano and Keras [Phase 3]
4. Implement the usage of webcam using OpenCV to classify the images in real-time [Phase 4]

Progress in Brief:

I have implemented the DNN model during April and the DNN was designed purely with the python. Also, I have created the DNN with the TensorFlow during June and learned about Keras, Theano and CNN during June. I have implemented the CNN with Keras and Theano during July, Also I have learned about various video processing techniques. And worked on HAAR and Contours methods for object motion detection during June. I have implemented the face expression calculation from a real-time webcam.

Work Completed (Phase 1 and Phase 2 are finished):

Logistic regression: Soft-Max:

As I planned, I have implemented the Soft-Max approach to DNN and got the results of its cost and accuracy.

I will be working on rest on the modules to finish all the above specified phases on time by July 28th.