WEEK 4
COUNTING IN DENSE CROWDS USING DEEP LEARNING

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LAST WEEK

- Worked with Pre-Trained Models
- Reviewing Code from Past Paper
- Training and Testing this Code
- Extracted Features from ImageNet

CURRENT PROGRESS

CREATING SCRIPTS

Main Script

```
% This is the main script for the first experiment.

% Extracts features from ImageNet (convfc6, relu6, convfc7, relu7)
featureExtractor

% Generates feature vectors for each layer
getFeatVecs

% Generatures one final feature struct
genFeatureMatrix

% Trains an SVM classifier on the features after placing them in single vector
trainSVM
```



- Created various scripts and functions to extract the features from 4 parts of the ImageNet Neural Network.

TRAINING SVM CLASSIFIER

- Trained an SVM classifier with the extracted features.
- Took about an 90 min to train.
- Tested the model afterward.
- Currently retraining due to errors.

Previous Model

```
optimization finished, #iter = 59283
nu = 0.859956
obj = -113266.057299, rho = -86.356657
nSV = 16824, nBSV = 14900
Elapsed time is 1501.001899 seconds.
```

New Model

```
optimization finished, #iter = 11103
nu = 0.999839
obj = -1.#IND00, rho = 7524602.391736
nSV = 18620, nBSV = 18620
Elapsed time is 5947.413046 seconds.
```

TESTING DATA

- Working on creating an appropriate test function for the trained model.
- Must perform tests in a 5-fold validation setting. Therefore, will use the TCMScore Dataset of five images.





```
Mean squared error = -1.#IND (regression)
Squared correlation coefficient = -1.#IND (regression)
Elapsed time is 50.539173 seconds.

Absolute Difference (AD): NaN, Normalized AD (NAD): NaN
```

Mean squared error = 3.05719e+13 (regression)
Squared correlation coefficient = 0.00215527 (regression)
Elapsed time is 47.907124 seconds.

Absolute Difference (AD): 291192322.42, Normalized AD (NAD): 28080262.53

ERRORS & CHALLENGES

- Large error values for mean-squared error
- Presently reviewing code to find any errors and retraining SVM classifier

NEXT STEPS

- Fix Errors & Test SVM classifier again
- Start working with Fisher Vectors
- Begin researching and working on videos