

REU Week 8

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Redesigned Network

- Two more layers of convolution and subsampling
- All filters are 5x5 now
- The feature maps still do not represent clearly visible structures, but they are much more distinct.

Classification Rates

All Training Data - 91.7% - 96.7%

All Test Data - 87.8% - 90.5%

Now the error isn't exclusively from humans.

All human train images: 52.98% - 96.6%

All human test images: 51.5% - 89.3%

HOG test human identification rate is about 94%

This is with only 1/2 of the human images and only 900 of the negative images.

Improvements

- structure of the network
- learning rate values
- initial images were weighted too heavily
- the imbalance between the number of human and nonhuman images made the network prefer nonhuman classification

This week

Finish modifying the code to improve the learning rates tonight so we can train on all of the images overnight.

Start working on integral channel features

- provide initial structure (novel)
- successfully used for another form of human detection

Use unsupervised learning for the first one or two layers instead of backpropagation.