Image preprocessing: rescale pixels

Architecture

* Convolutional layers
* Activation function
* Pooling layers
* Dropout
* Optimizer
* Data augmentation
* Other hyperparameter tuning

**Compare AUC**

Tune Parameters

0.991

SVM vs. kNN

**Non-Neural Network   
vs.  
Neural Network Models**

**Neural Network Model**

**Non-Neural Network Model**

OpenCV

* Grayscale image
* Simple and adaptive image thresholding
* Erosion and dilation
* Sobel and Laplacian gradient filters
* Canny edge detection
* Harris and Shi-Tomasi corner detection
* Image blending

**Image Preprocessing   
and Feature Extraction**

Grayscale + Histogram of Oriented Gradients (HOG)

**SVM**

0.74

0.83

**kNN**

0.72

0.77

Final non-NN model is SVM with grayscaled image and HOG

Convolutional Neural Network

**Compare AUC**

Tune Parameters