ECE 763
Project 01 Report

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Data: The dataset I used was the FDDB: Face Detection Data Set. This data set contains the annotations for 5171 faces in a set of 2845 images taken from the Faces in the Wild data set. The data was downloaded from http://vis-www.cs.umass.edu/fddb/

Since the annotations given by the authors is elliptical, we need to first convert them into bounding box format. Next stage was cropping faces for the face dataset. For non-face used random cropping from the images. 1000 images from face/non-face was used for training and 100 from face/non-face was used for testing. The images were in black and white, though opencv was used to convert them to 3 channel images.
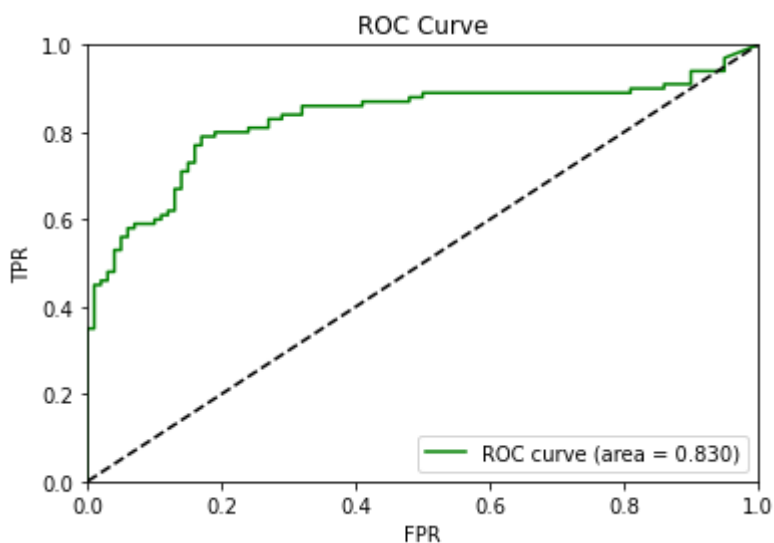
Face dimensions used were **20x20**.

Libraries used: Numpy, Scipy, OpenCV, PIL, sklearn, Matplotlib

1. **Single gaussian model**

False positive rate	0.87
False negative rate	0.35
Misclassification rate	0.61

ROC Curve:

	Mean	Covariance

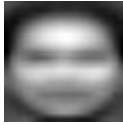|		
Face Image		
Non Face Image		

2. Mixture of Gaussian model

I trained the mixture of gaussian model with 3 components.

False positive rate	0.56
False negative rate	0.46
Misclassification rate	0.51

ROC Curve:
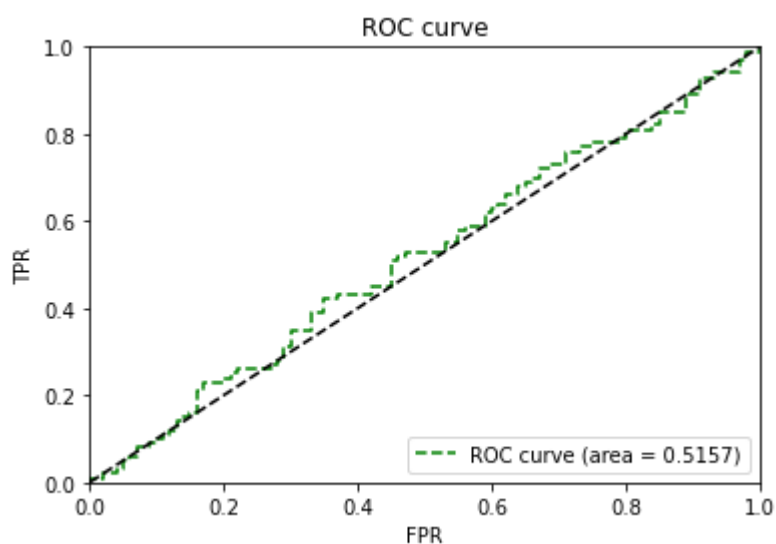
	Mean	Covariance
Face Image C1		
Face Image C2		
Face Image C3		

Non Face Image C1		
Non Face Image C2		
Non Face Image C3		
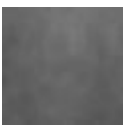
3. T-Distribution Model

Built T-distribution model with n_components = 5

False positive rate	0.0
False negative rate	0.47
Misclassification rate	0.235

ROC Curve:
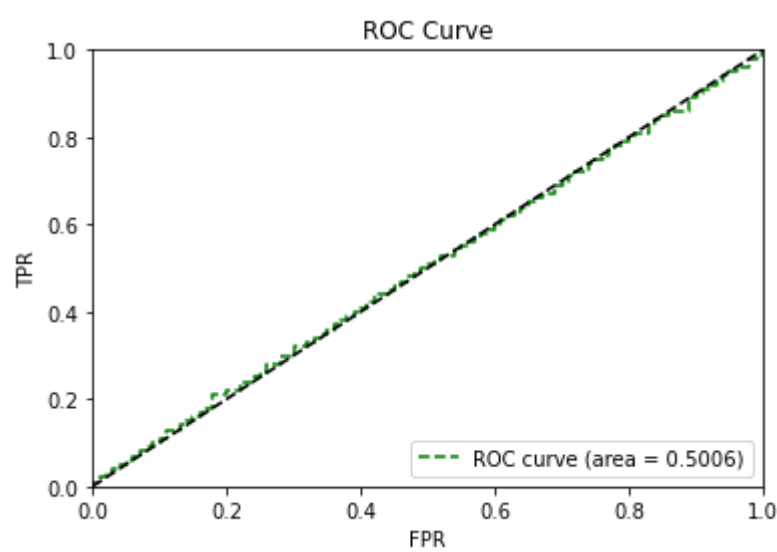
	Mean	Covariance
Face Image		
Non Face Image		

4. Factor Analyser model

False positive rate	0.45
False negative rate	0.48
Misclassification rate	0.465

ROC Curve:

	Mean	Covariance
Face Image		
Non Face Image		