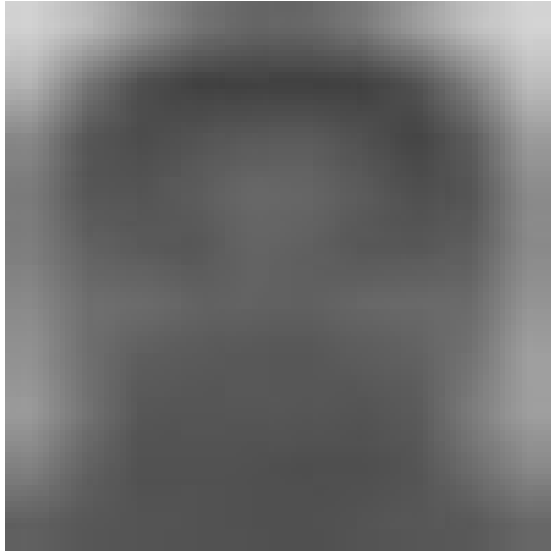


COMPUTER VISION PROJECT 1

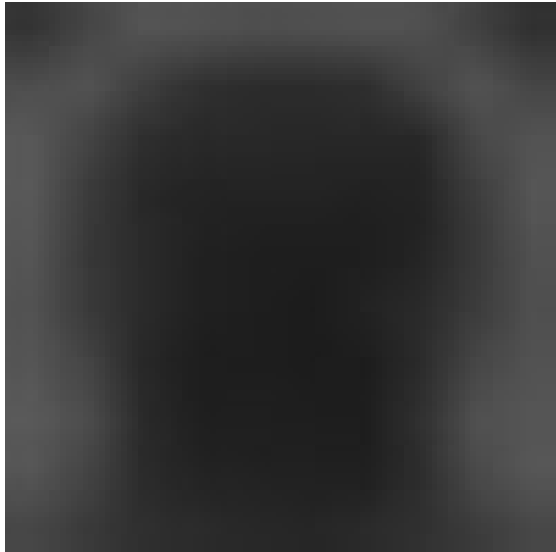
SIDDHARTH GANESH

MODEL 1: SINGLE GAUSSIAN MODEL

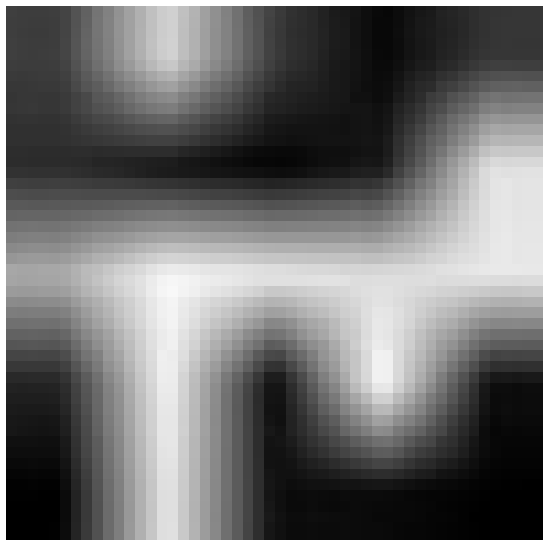
The visualized estimated Mean is shown below:



The visualized estimated Covariance is shown below:



The visualized mean is as shown below for non face images:



The visualized covariance for non faces is as shown below:



With 0.5 as posterior:

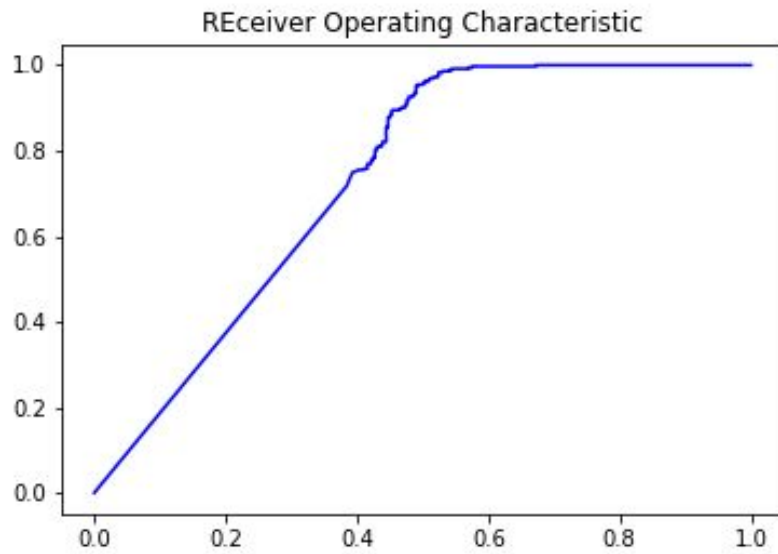
With 351 Test Images:

False Positive rate: 0.028

False Negative rate : 0.239

Misclassification rate: 0.1339

The ROC curve for single multivariate model is as shown below:

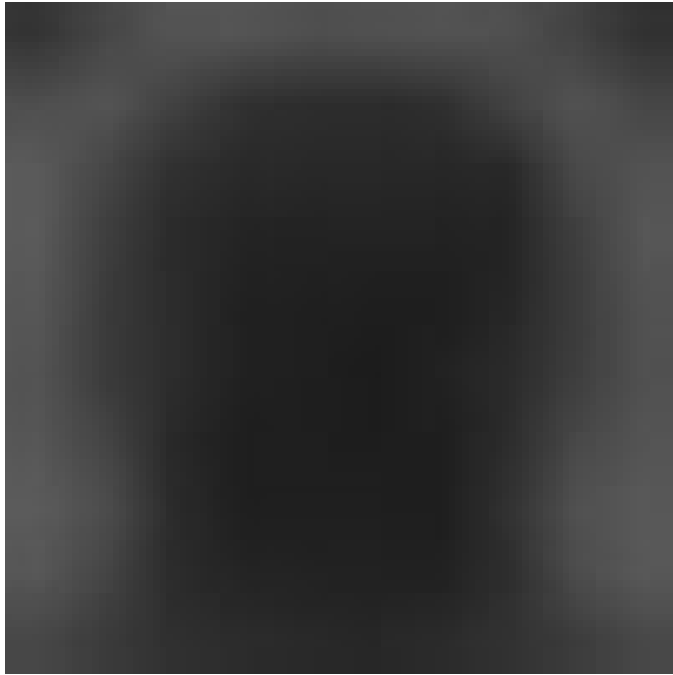


MODEL 2: MIXTURE OF GAUSSIAN MODEL

The visualized estimated mean for face is shown below:



The visualized estimated covariance for face is as shown below:



The visualized estimated mean for non faces is as shown below:



The visualized estimated covariance for non faces is as shown below:



With 0.5 as posterior:

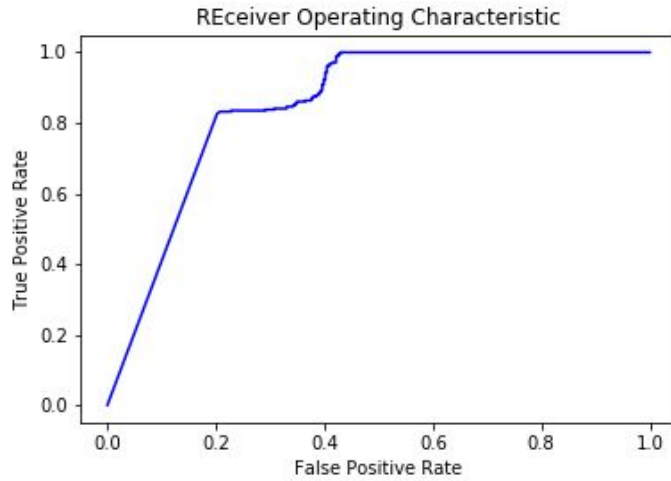
351 Testing images each for face and non face:

False Positive Rate: 0.31

False Negative Rate:0.18

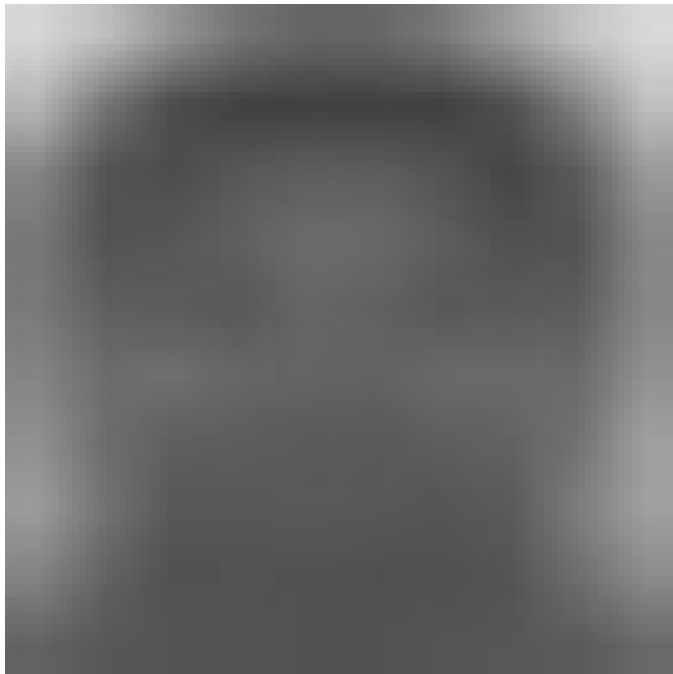
Misclassification Rate:0.2464

The ROC curve for Mixture of Gaussian is as shown below:



MODEL 3:T DISTRIBUTION MODEL

The visualized estimated Mean is as shown below:



The visualized estimated covariance for faces is as shown below:



The visualized Mean for non faces is as shown below:



The visualized Covariance for non faces is as shown below:



With 0.5 as posterior:

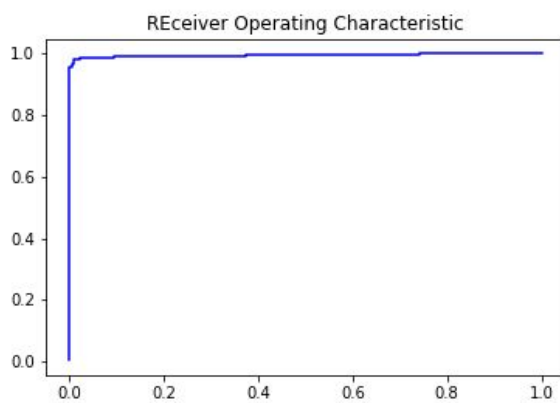
351 Testing images each for face and non face:

False Positive Rate: 0.03

False Negative Rate: 0.1908

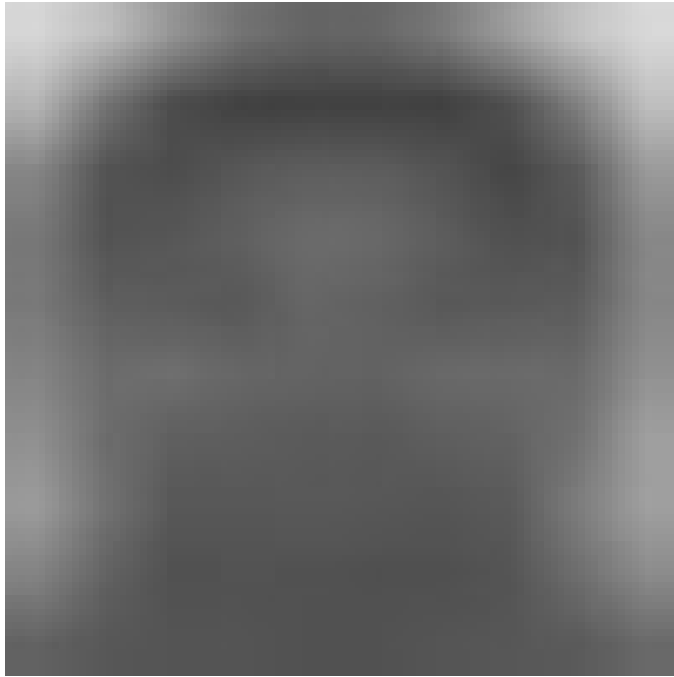
Misclassification Rate: 0.111

The ROC curve for T distribution is as shown below:

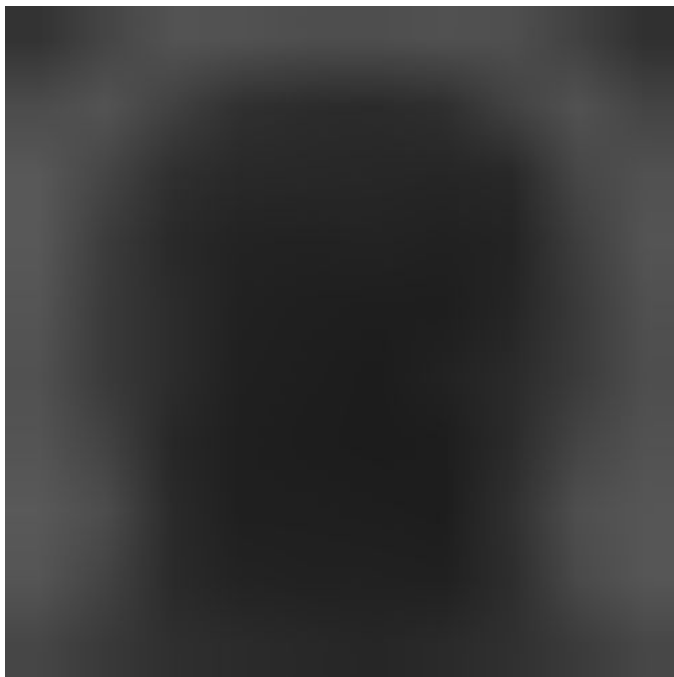


MODEL 4:MIXTURE OF T DISTRIBUTION MODEL

The visualized estimated Mean(COMBINED) for faces is as shown below:



The visualized estimated covariance(COMBINED) for faces is as shown below:



The visualized Mean for non faces(COMBINED) is as shown below:



The visualized Covariance for non faces(COMBINED) is as shown below:



With 0.5 as posterior:

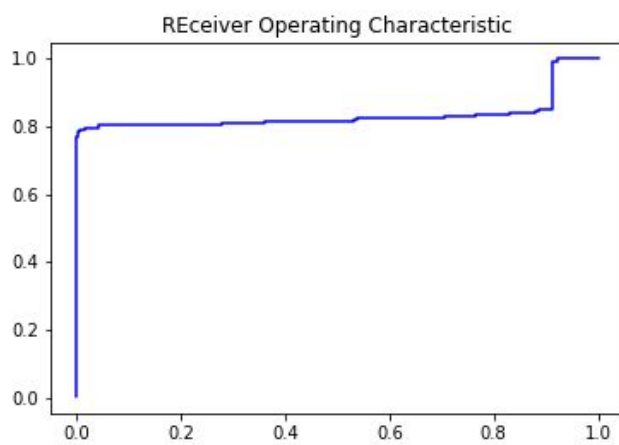
351 Testing images each for face and non face:

False Positive Rate: 0.047

False Negative Rate: 0.001

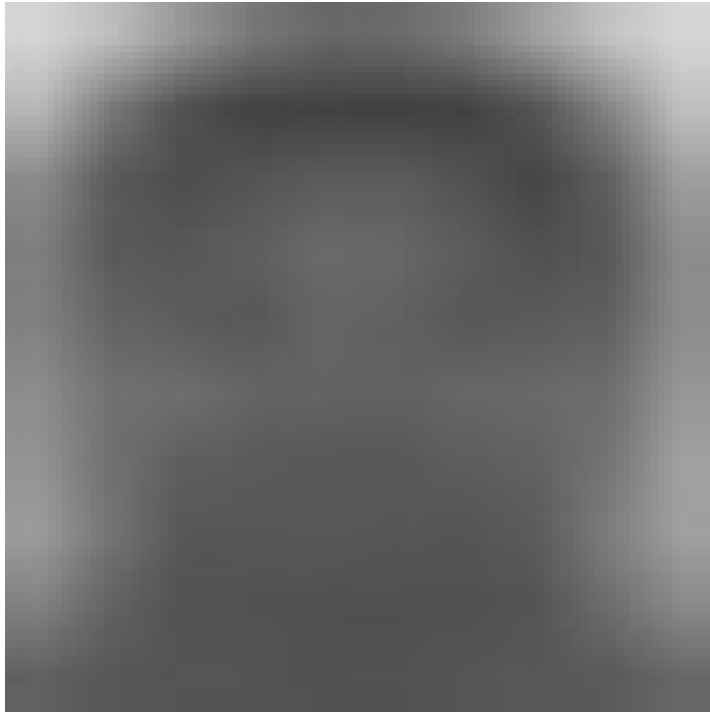
Misclassification Rate: 0.02279

The ROC curve for T distribution is as shown below:



MODEL 5:FACTOR ANALYZER MODEL

The visualized estimated mean for faces is as shown below:



The visualized estimated covariance for faces is as shown below:



The visualized estimated mean for non face is as shown below:



The visualized estimated covariance for non face is as shown below:



With 0.5 as posterior:

351 Testing images each for face and non face:

False Positive Rate: 0.0

False Negative Rate: 0.03

Misclassification Rate: 0.313

The ROC curve for factor analyzer is as shown below:

