Table of Contents


```
clear;
close all;
clc;

files = dir('images/*.bmp');
images = cell(1,30);
eigen_values = zeros(1,30);
all_images = cell(1,50);
count = 1;
figure;
c = 1;
```

Getting the face images

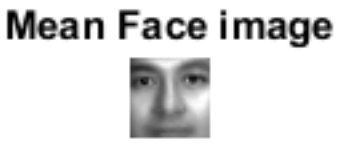
```
disp('Getting all faces from the directory');
for i = 1:length(files)
    filename =  ['images/' files(i).name];

    if mod(i,5)<= 3 && mod(i,5) >= 1
        file = imread(filename);

        subplot(3,10,c);
        imshow(file,[]);
        title(['Orig #' num2str(c)]);

        % Mean face calculation
        file = reshape(file,900,1);
        images{count} = file;


        count = count + 1;
        c = count;
    end
    all_images{i} = reshape(imread(filename),900,1);
end
```

```
Getting all faces from the directory
```

Mean face calculations

```
images = cell2mat(images);
sumImage = zeros(900,1);

all_images = cell2mat(all_images);
disp('calculating the mean face');
for j = 1:30
    for k =  1:900
        sumImage(k,1) = mean(images(k,:));

    end
end

meanFace = reshape(sumImage,30,30);
figure;
imshow(meanFace,[]);
title('Mean Face image')
```

```
calculating the mean face
```



Original face subtracted by the mean face

```
for i = 1: sqrt(length(images))
   A(:,i)=double(images(:,i))-sumImage(:,1);
end
```

Mean Faces subtracted images

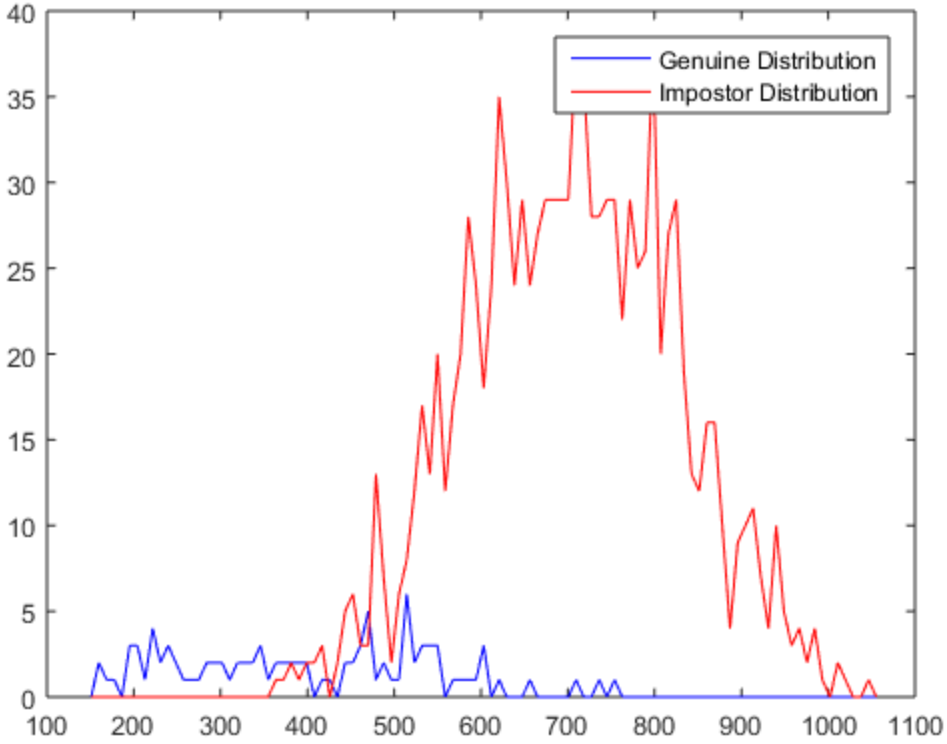
```
figure;
for i = 1:30
    subplot(3,10,i);
    imshow(reshape(A(:,i),30,30),[]);
    title(['Normalized #' num2str(i)]);
end
covariance = cov(A');
```

Each Function Calling

```
disp('Processing 25...');
face(50,25,5,5, covariance, all_images, sumImage,'n');
disp('End of process for 25');

disp('Processing 20...');
face(50,20,5,4, covariance, all_images, sumImage,'n');
disp('End of process for 20');

disp('Processing 15...');
face(50,15,3,5, covariance, all_images, sumImage,'n');
disp('End of process for 15');

disp('Processing 10...');
face(50,10,2,5, covariance, all_images, sumImage,'n');
disp('End of process for 10');

disp('Processing 5...');
face(50,5,1,5, covariance, all_images, sumImage,'n');
disp('End of process for 5');
```

```
Processing 25...
Begin ROC..
End ROC..
End of process for 25
```

```
Processing 20...
Begin ROC..
End ROC..
End of process for 20
Processing 15...
Begin ROC..
End ROC..
End of process for 15
Processing 10...
Begin ROC..
End ROC..
End of process for 10
Processing 5...
Begin ROC..
End ROC..
End of process for 5
```


Genuine Distribution
Impostor Distribution
40
35
30
25
20
15
10
5
0
100
200
300
400
500
600
700
800
900
1000
1100

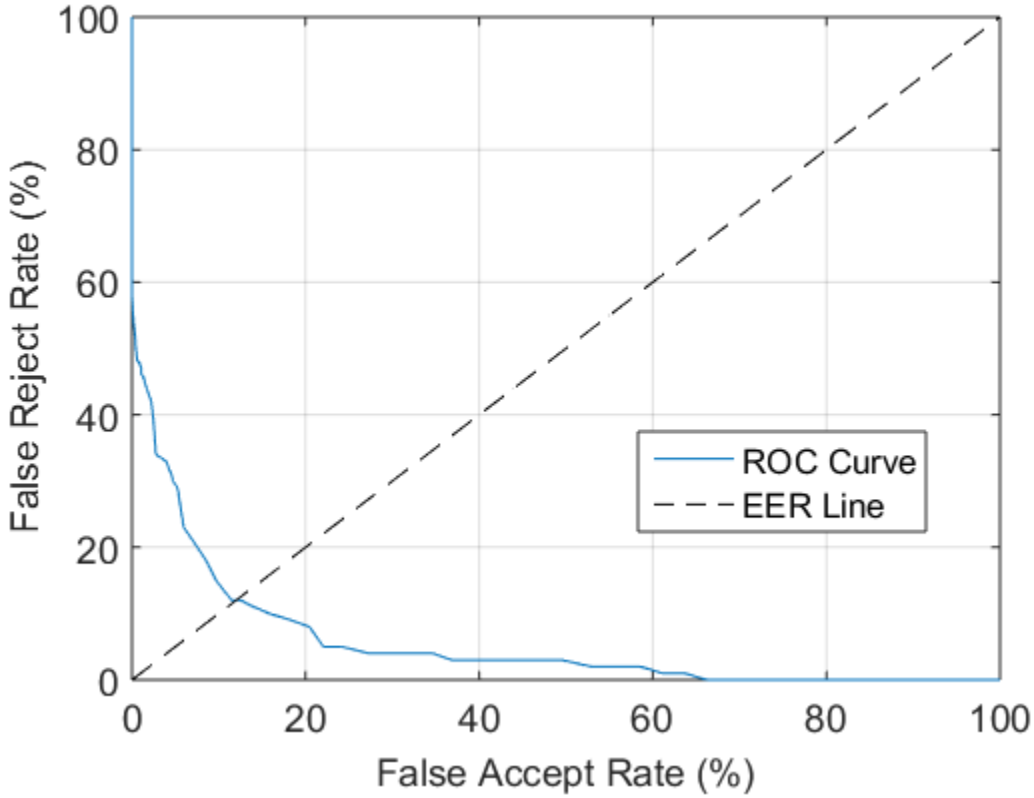
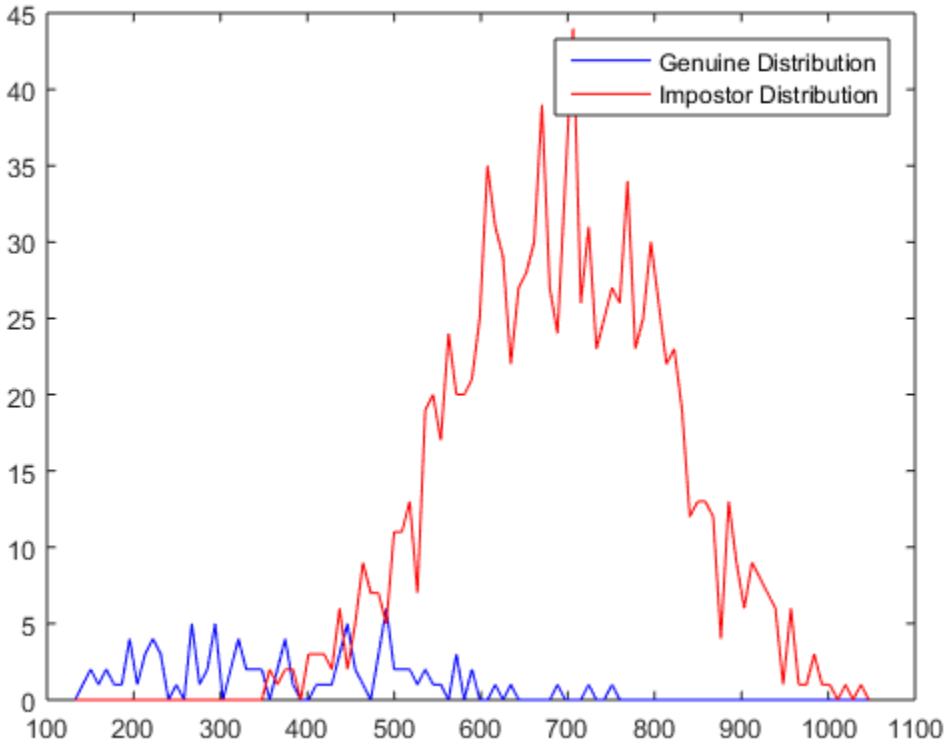
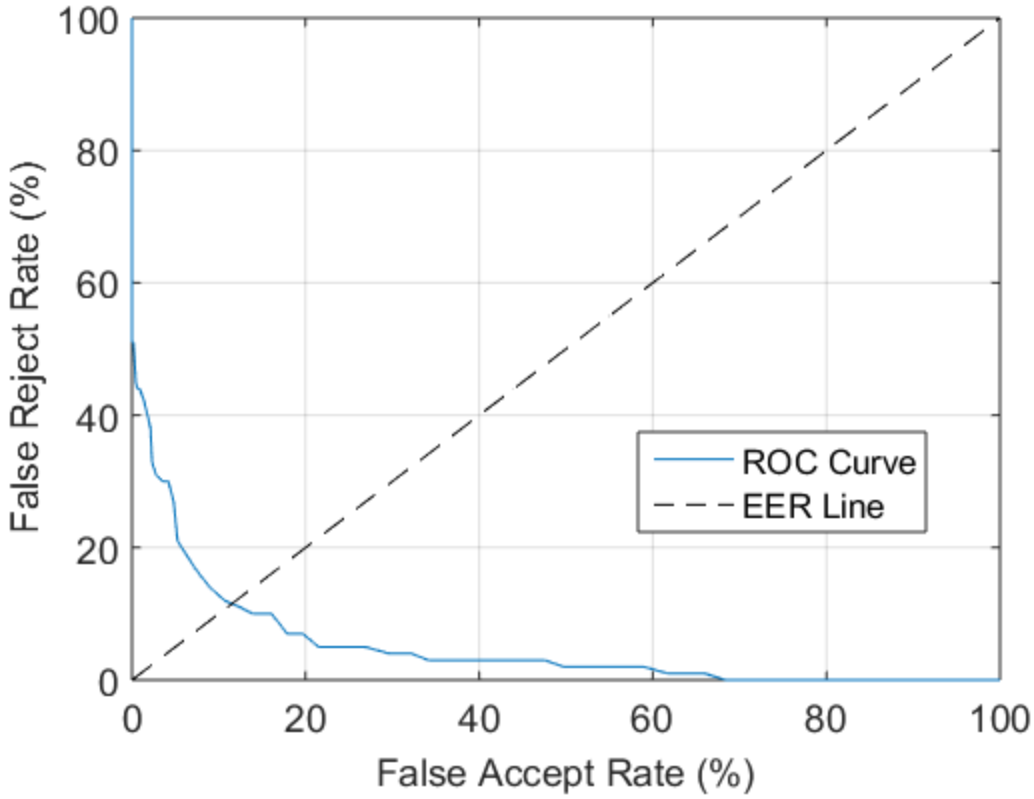

False Reject Rate (%)
False Accept Rate (%)
ROC Curve
EER Line
100
80
60
40
20
0
0
20
40
60
80
100


Image #1
Image #2
Image #3
Image #4
Image #5
Image #6
Image #7
Image #8
Image #9
Image #10
Image #11
Image #12
Image #13
Image #14
Image #15
Image #16
Image #17
Image #18
Image #19
Image #20


Genuine Distribution
Impostor Distribution
45
40
35
30
25
20
15
10
5
0
100
200
300
400
500
600
700
800
900
1000
1100


False Reject Rate (%)
False Accept Rate (%)
ROC Curve
EER Line
0
20
40
60
80
100

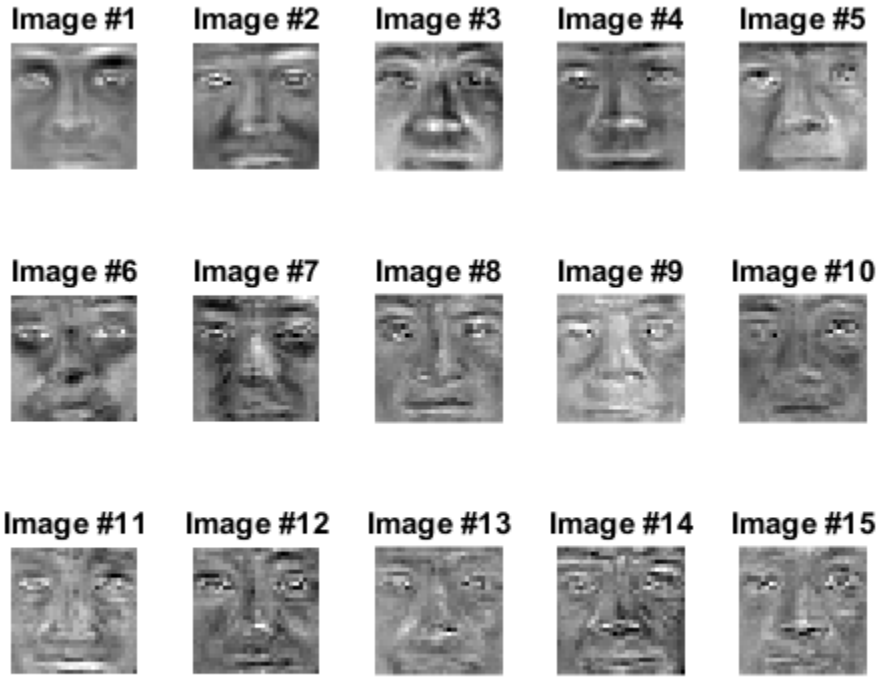
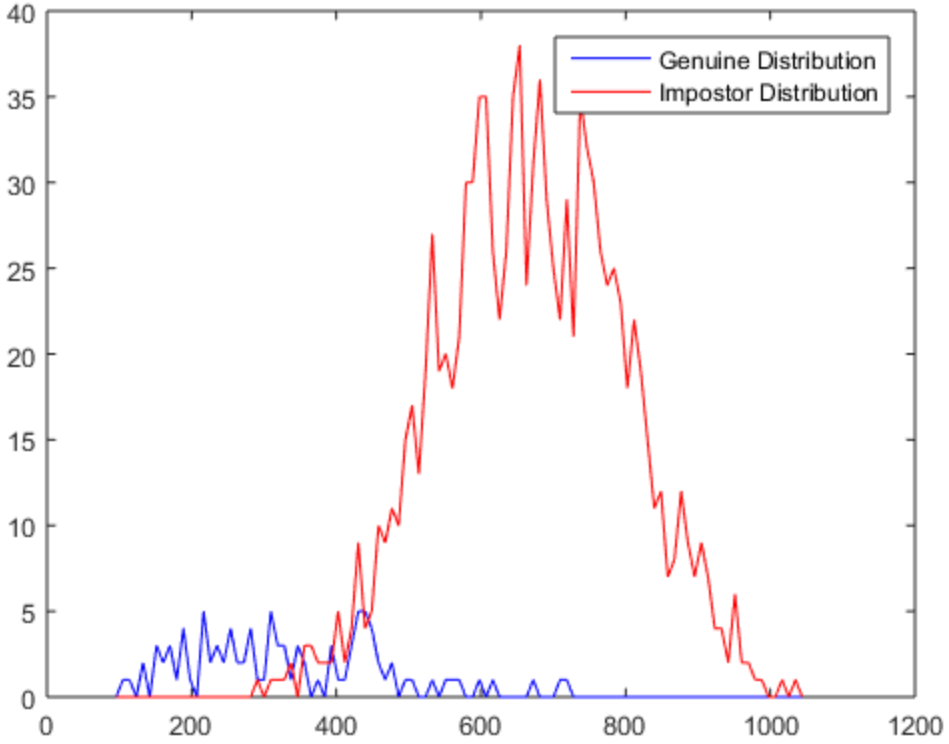
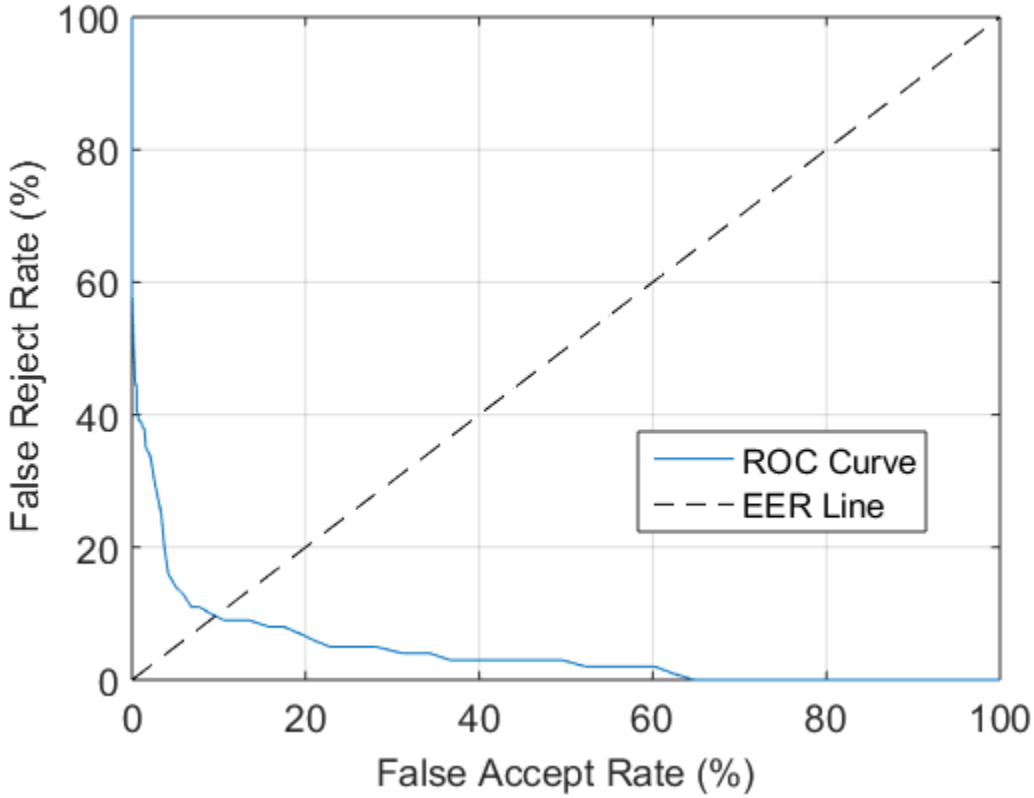


Image #1
Image #2
Image #3
Image #4
Image #5
Image #6
Image #7
Image #8
Image #9
Image #10
Image #11
Image #12
Image #13
Image #14
Image #15


Genuine Distribution
Impostor Distribution
0
5
10
15
20
25
30
35
40
0
200
400
600
800
1000
1200


ROC Curve
EER Line
False Reject Rate (%)
False Accept Rate (%)
0
20
40
60
80
100

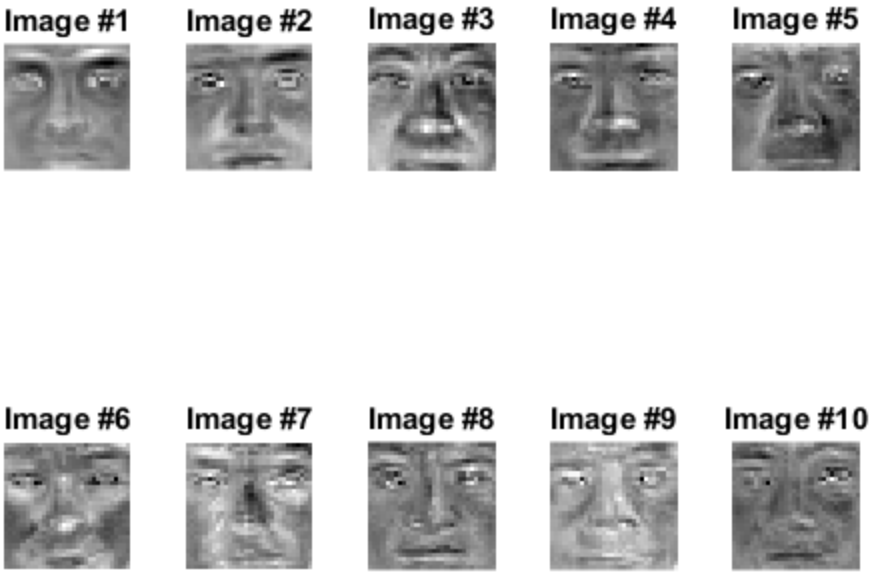
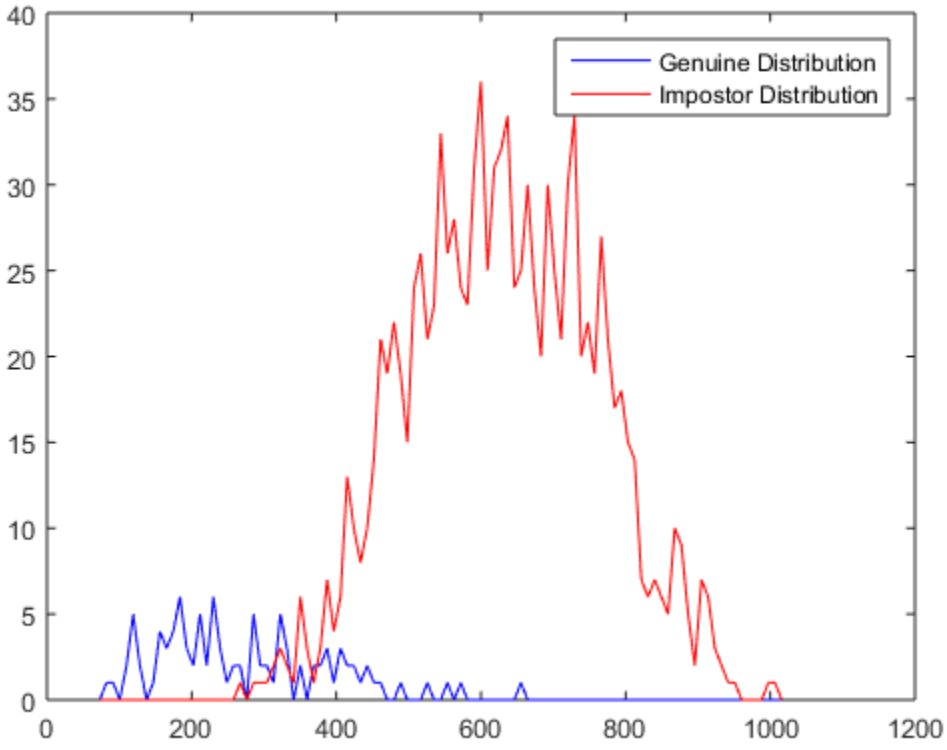


Image #1
Image #2
Image #3
Image #4
Image #5
Image #6
Image #7
Image #8
Image #9
Image #10


Genuine Distribution
Impostor Distribution
0
5
10
15
20
25
30
35
40
0
200
400
600
800
1000
1200

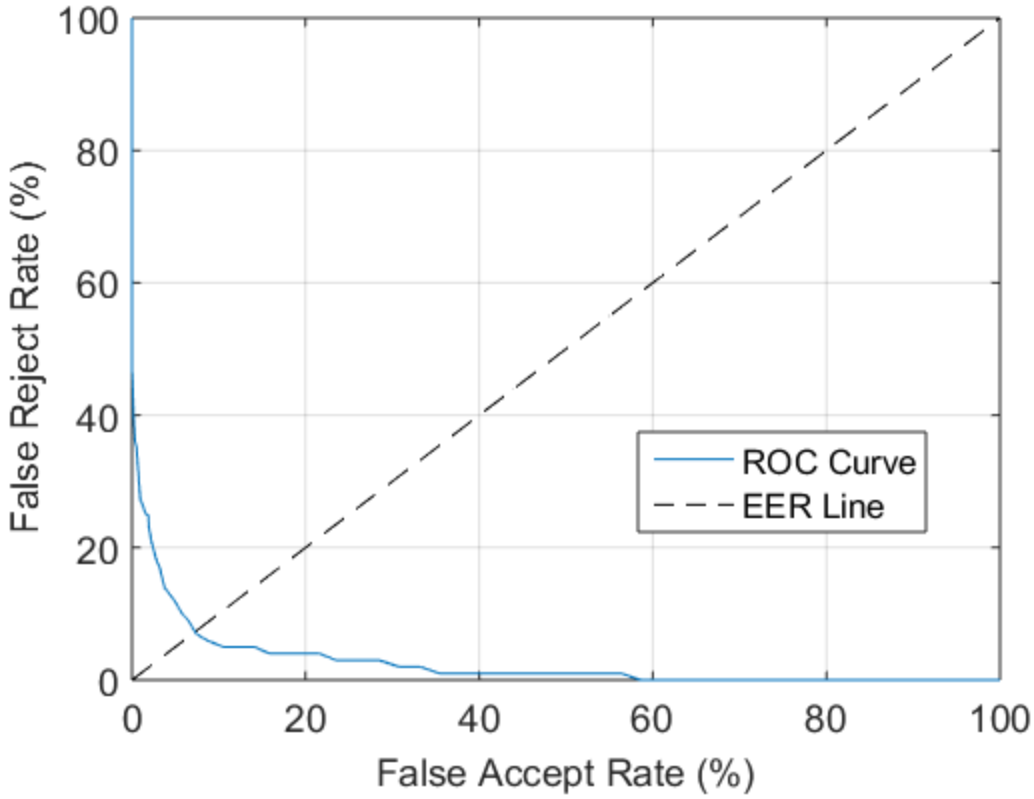
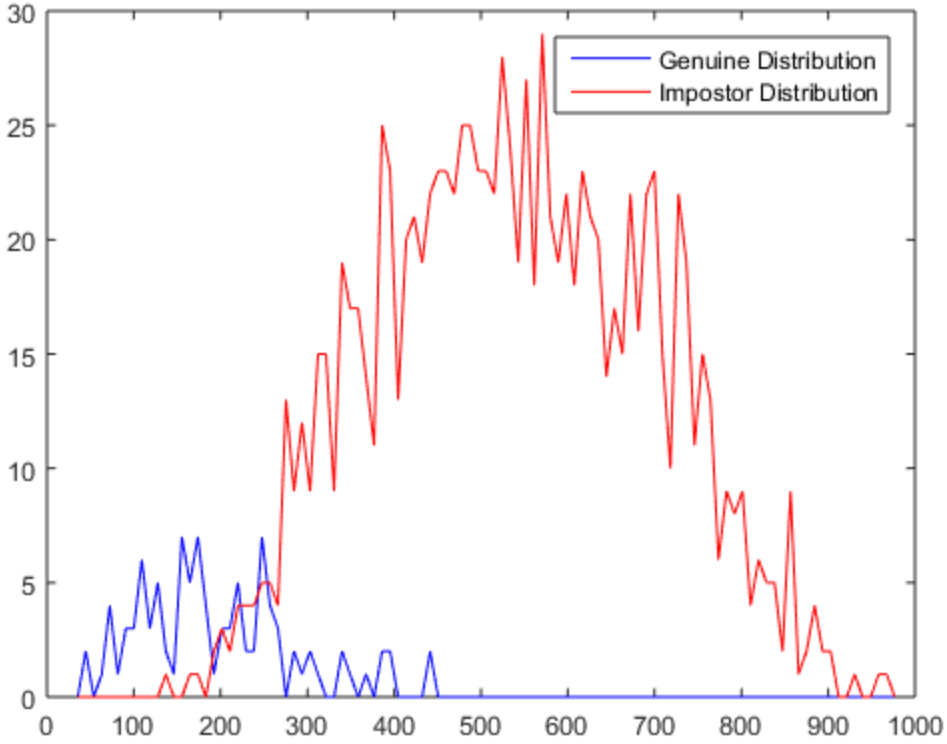
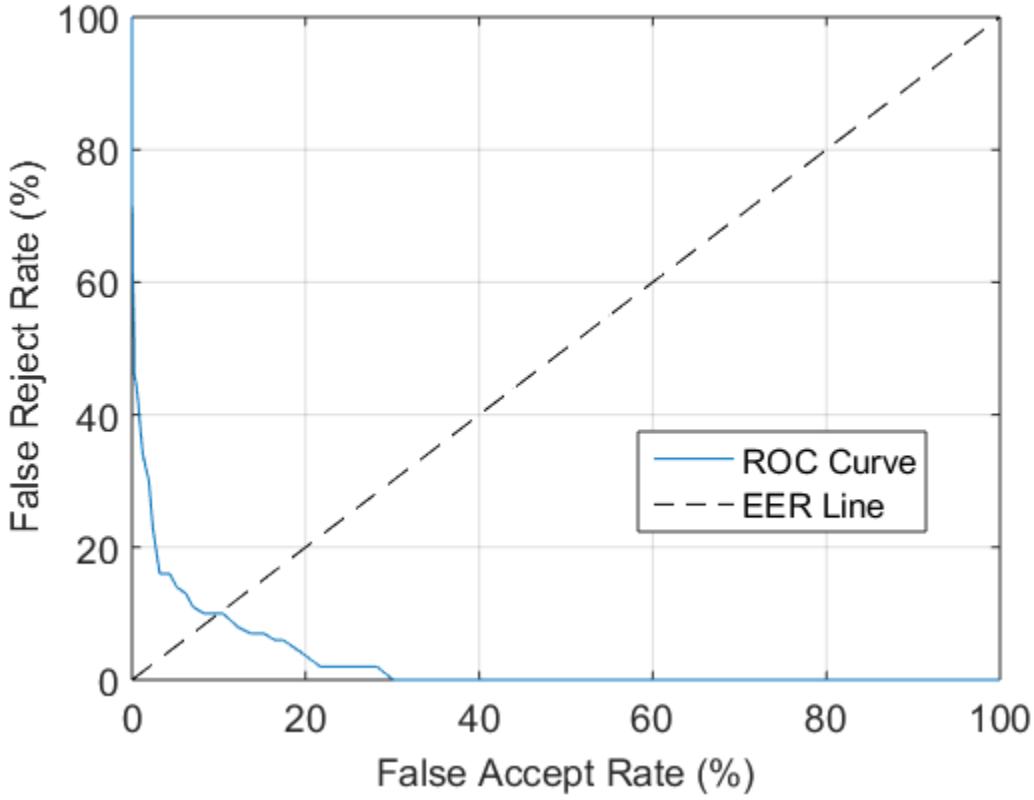

False Reject Rate (%)
False Accept Rate (%)
ROC Curve
EER Line
0
20
40
60
80
100


Image #1
Image #2
Image #3
Image #4
Image #5


Genuine Distribution
Impostor Distribution
30
25
20
15
10
5
0
0
100
200
300
400
500
600
700
800
900
1000

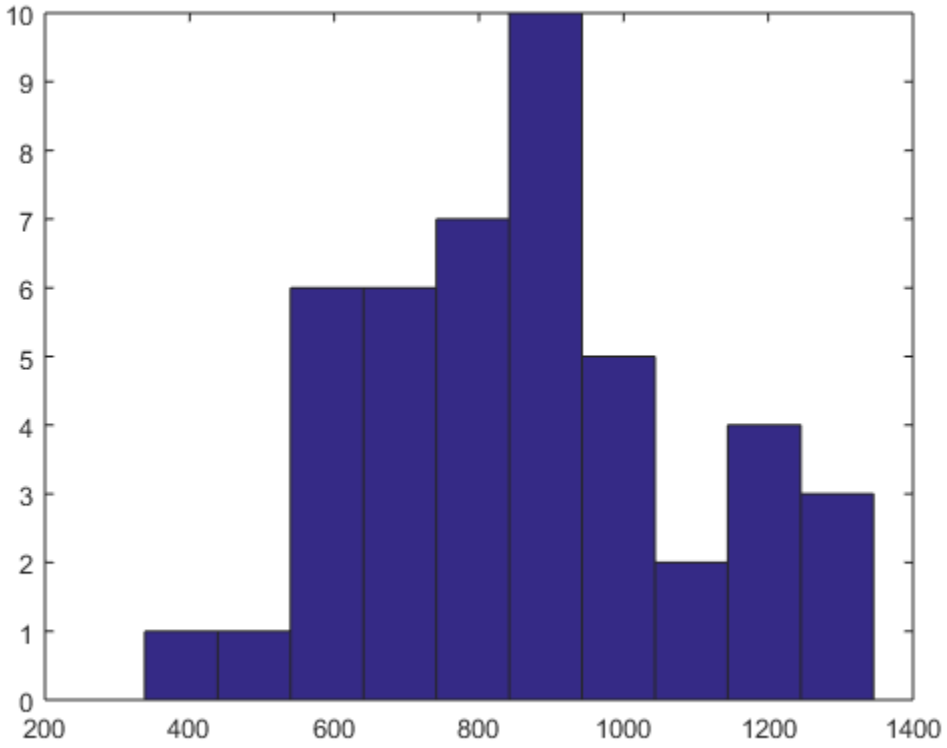

False Reject Rate (%)
False Accept Rate (%)
ROC Curve
EER Line
100
80
60
40
20
0
0
20
40
60
80
100

My Images

```
disp('Running my Face Images');
files2 = dir('My_Face_Pictures/*.jpg');
all_my_images = cell(1,10);
count = 1;
figure;

for i = 1:length(files2)
    filename =  ['My_Face_Pictures/' files2(i).name];
    file2 = imread(filename);

    subplot(2,5,i);
    imshow(file2,[]);
    title(['My Face #' num2str(i)]);
    all_my_images{i} = reshape(file2,900,1);
end
all_my_images = cell2mat(all_my_images);

disp('Processing My face in 3.....2.....1.... GO !!!!!!...');
face(10,25,5,5, covariance, all_my_images, sumImage,'m');
disp('End of processing my faces yaaaaa!');
```

```
Running my Face Images
Processing My face in 3.....2.....1.... GO !!!!!!...
End of processing my faces yaaaaa!
```


Image #1
Image #2
Image #3
Image #4
Image #5
Image #6
Image #7
Image #8
Image #9
Image #10
Image #11
Image #12
Image #13
Image #14
Image #15
Image #16
Image #17
Image #18
Image #19
Image #20
Image #21
Image #22
Image #23
Image #24
Image #25


10
9
8
7
6
5
4
3
2
1
0
200
400
600
800
1000
1200
1400

Published with MATLAB® R2015a