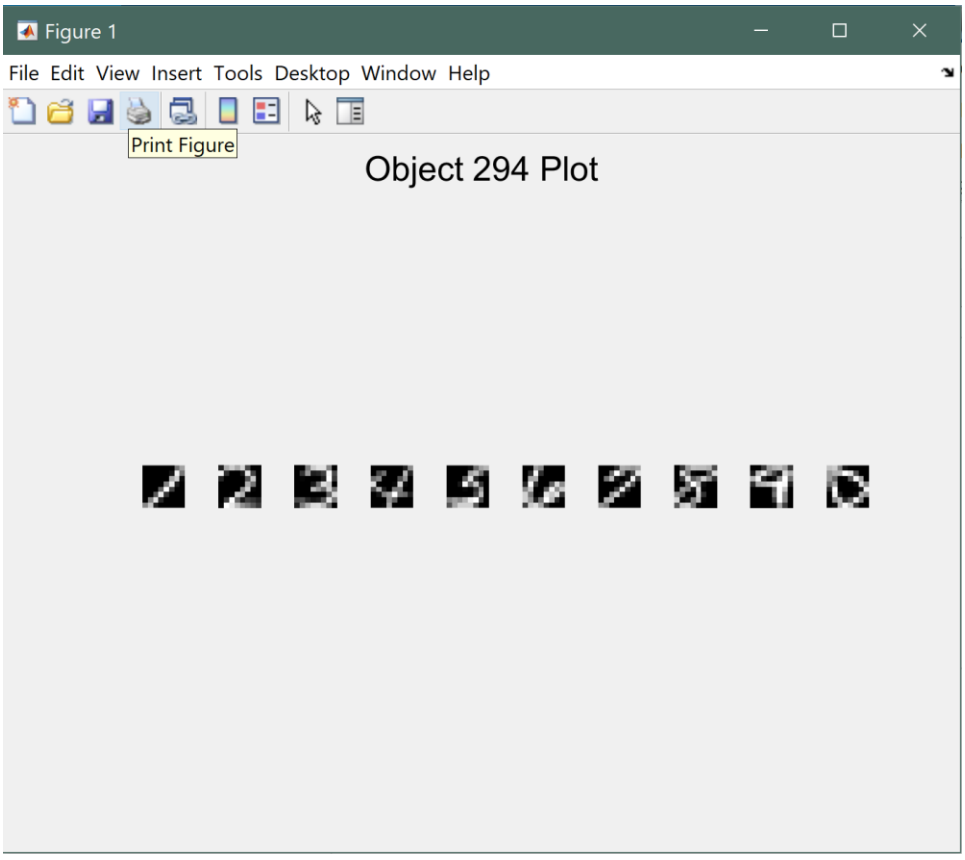
Gaussian Classifier Training

Random Sample Output

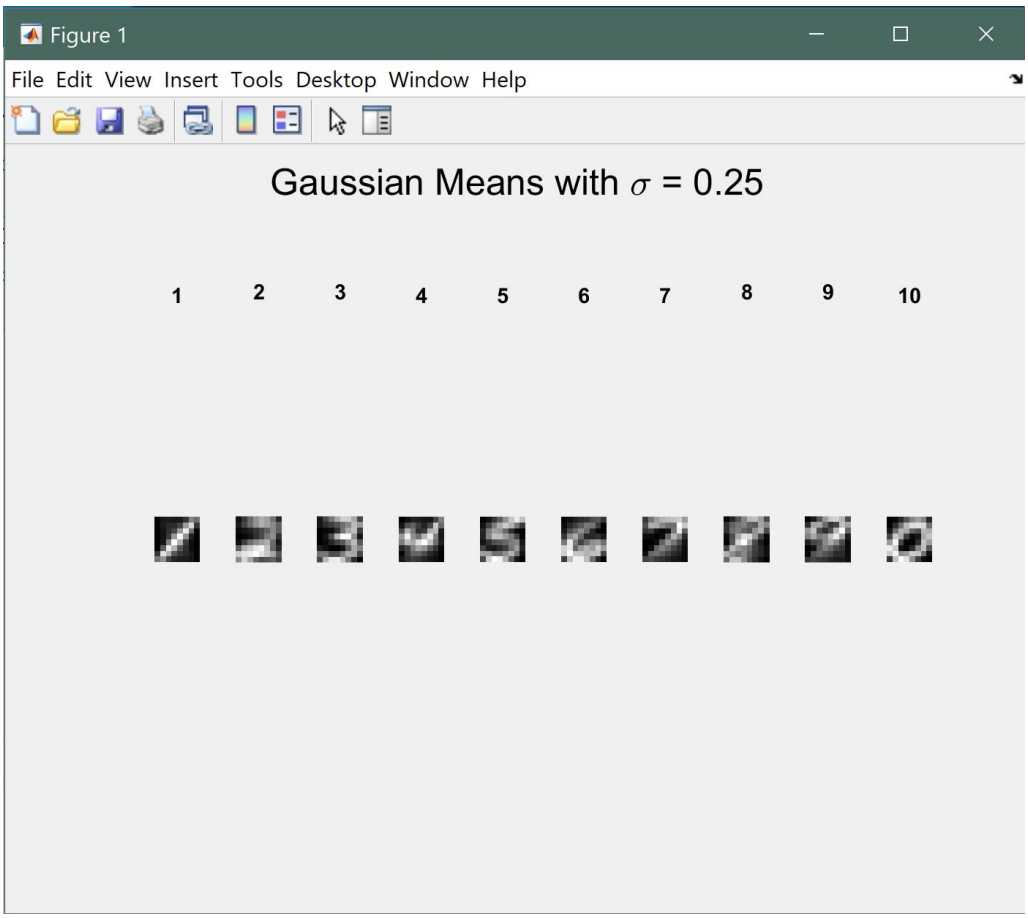
```
%% Learn Data and Data Dimensions
global D m K;
[D,m,K] = size(testData);
random = randi(700);

f1 = figure();
img = rand(400,600);
for i=1:10
 subplot(1,10,i);
 imagesc(reshape(trainData(:,random,i),8,8)');
 axis equal;
 axis off;
 colormap gray;
end
sgtitle(['Object ' num2str(random) ' Plot']);
```



Mean Plot

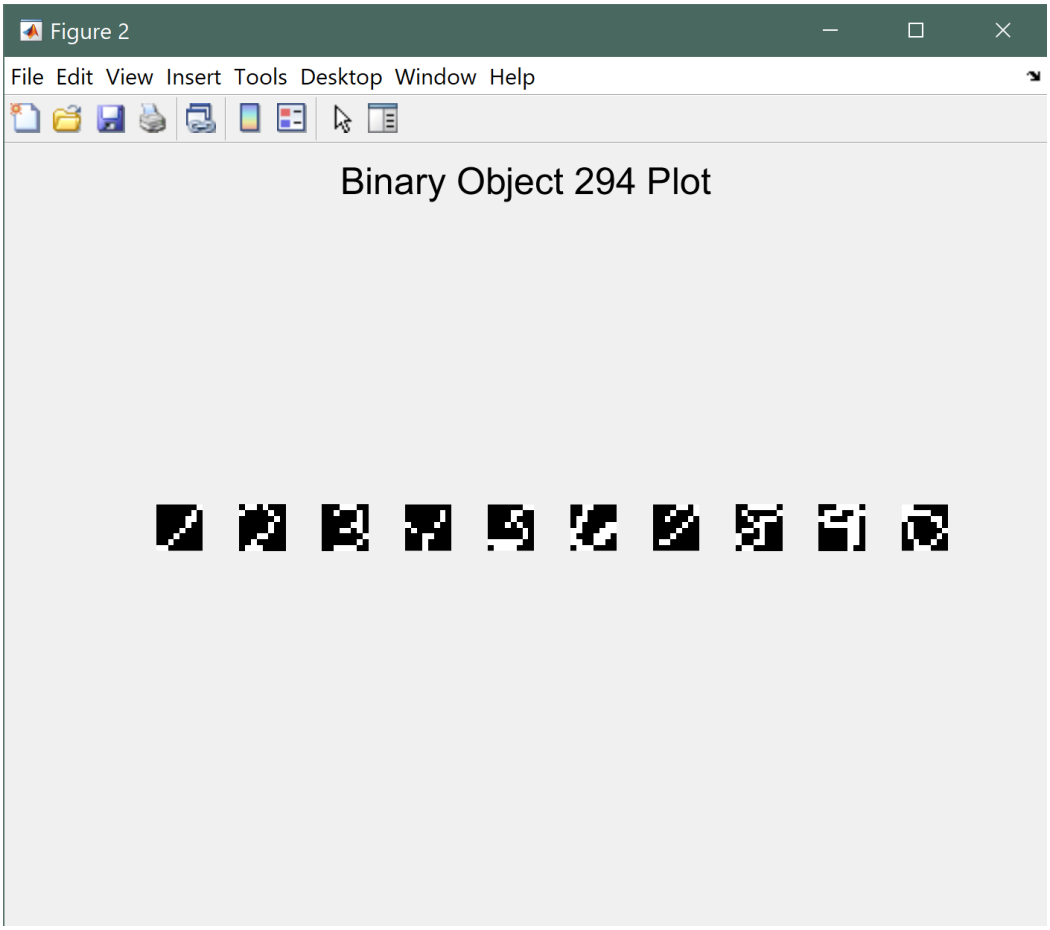
```
%% Gaussian Mean Plot
f2 = figure();
for i=1:K
 subplot(1,10,i);
 imagesc(reshape(mu(:,i),8,8)');
 axis equal;
 axis off;
 colormap gray;
 title([int2str(i)]);
 sgtitle('Gaussian Means with \sigma = 0.25');
end
```



Naïve Bayes Classifier Training

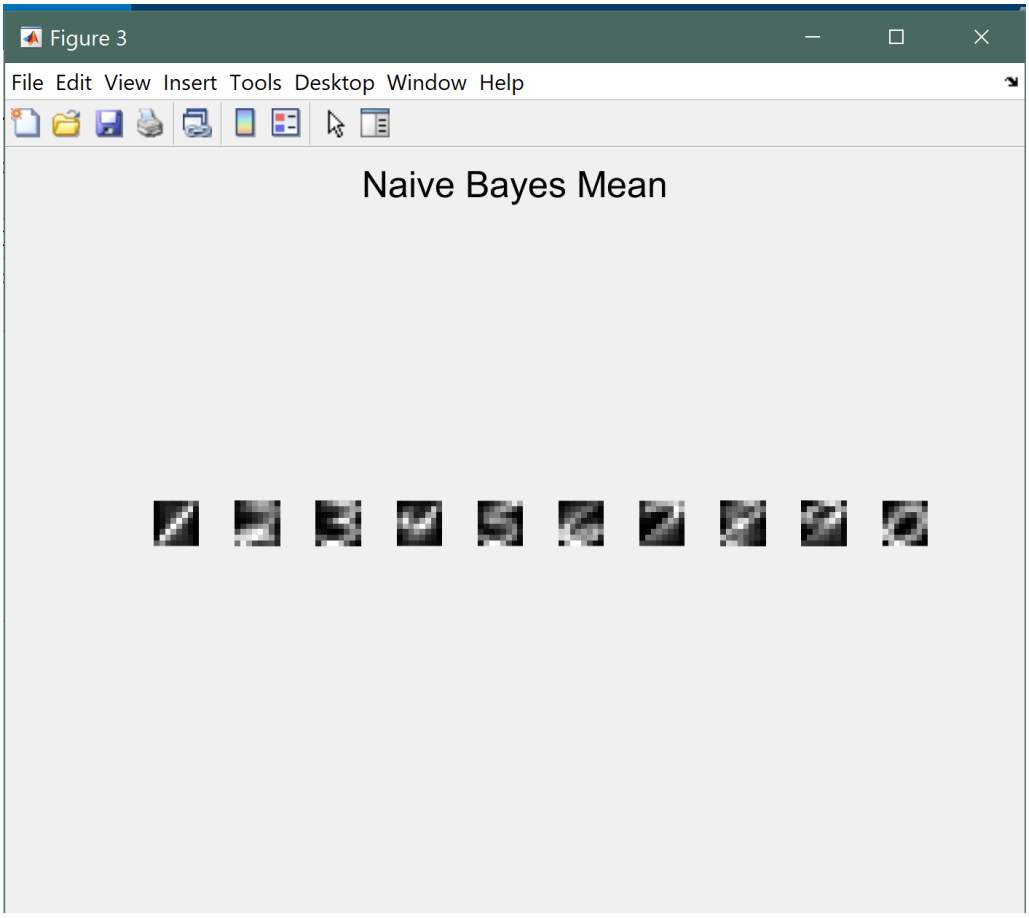
Random Sample Output

```
%% Naive Bayes Sample
f3 = figure();
img = rand(400,600);
for i=1:K
  subplot(1,10,i);
  imagesc(reshape(trainData2(:,random,i),8,8)');
  axis equal;
  axis off;
  colormap gray;
end
sgtitle(['Binary Object ' num2str(random) ' Plot']);
```



Eta Plot

```
%% Naive Bayes Mean Plot
eta = mean(trainData2,2);
f4 = figure();
for i=1:K
 subplot(1,10,i);
 imagesc(reshape(eta(:,i),8,8)');
 axis equal;
 axis off;
 colormap gray;
 sgtitle('Naive Bayes Mean') %try and make dynamic
end
```



Classifier Testing

Gaussian Output Table

gaussianOutputTable =

2×10 table

	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10
Error Count	69	81	63	61	68	44	63	109	110	53
Error %	17.25	20.25	15.75	15.25	17	11	15.75	27.25	27.5	13.25

Naïve Bayed Output Table

NBayesOutputTable =

2×10 table

	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10
Error Count	87	104	91	85	111	60	89	121	133	58
Error %	21.75	26	22.75	21.25	27.75	15	22.25	30.25	33.25	14.5

Combined Output Table

totalOutputTable =

2×11 table

	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Average Error %
Gaussian Classifier	69	81	63	61	68	44	63	109	110	53	18.025
Naive Bayes Classifier	87	104	91	85	111	60	89	121	133	58	23.475