Classification test

Table of Contents

This program evaluates the classifier by using the same function for taking samples of an image of a fixed size and evaluating the features vector

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ETSEIB-UPC

Initialization

Here the program clears all before running the program, also loads the previous programed classfier

```
clc, close all, clear all
load('classif2.mat');
```

First image for classification

Loads the images and evalutes the *car2()* function in 20 samples of every image which will be the feature vector of 100*1 size , also displays the averaged feature vector for the samples

```
im1='D101.gif';

car4=zeros(120,50);
for i=1:20
    car4(i,:)=car2(im1);
    close all
end
figure,subplot(121),imshow(imread(im1))
subplot(122),bar(mean(car4(1:20,:)))
```
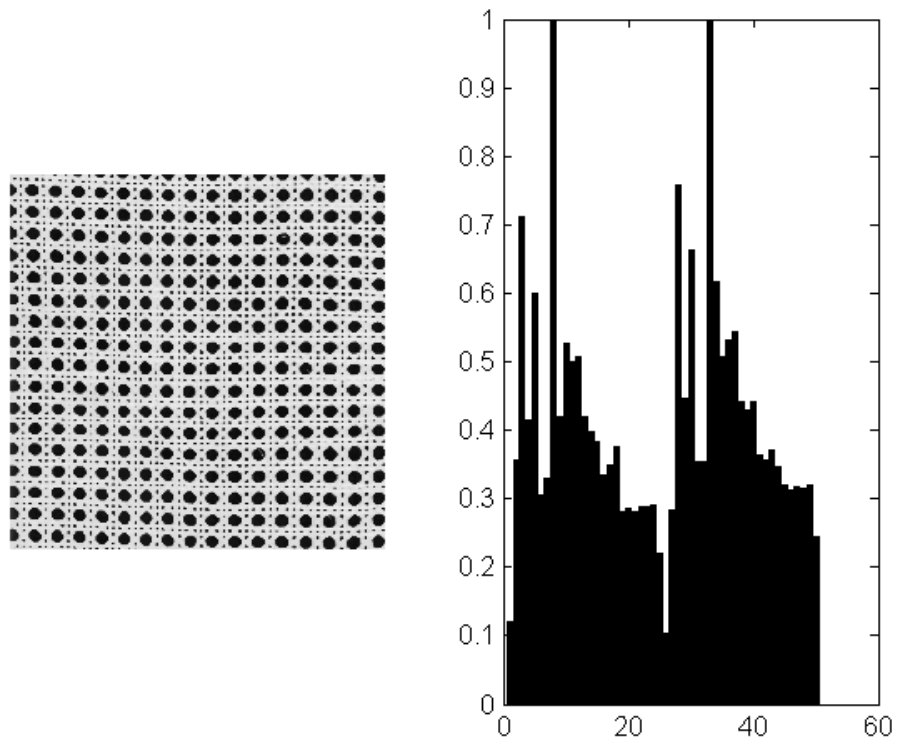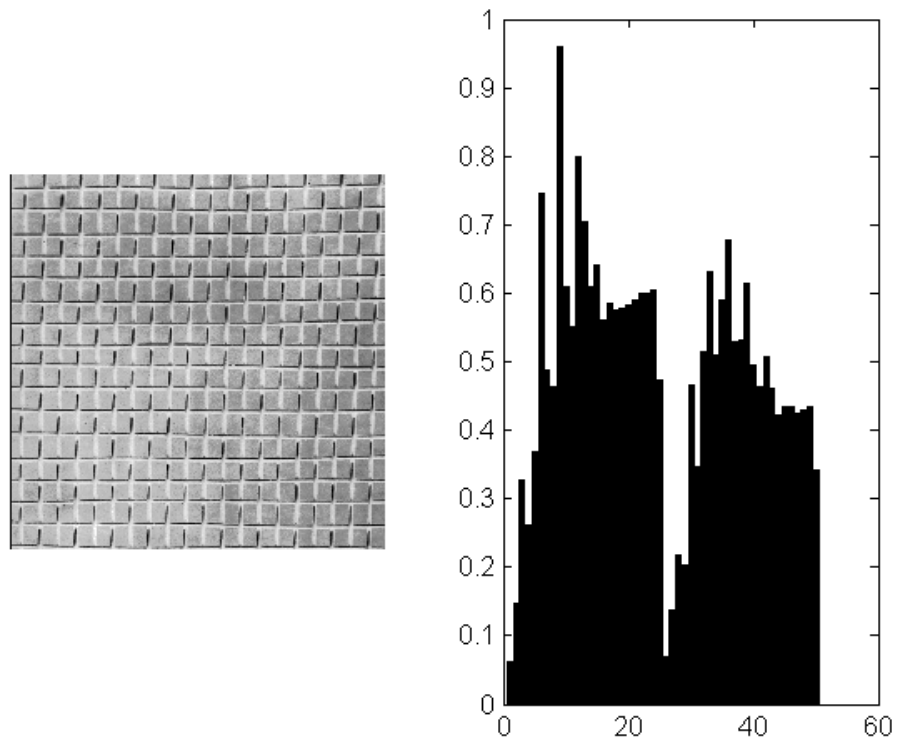
Second image for classification
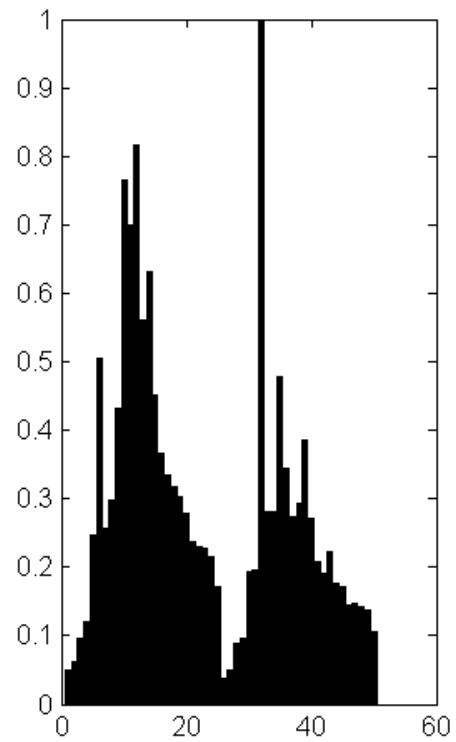
```matlab
im1='D1.gif';

for i=1:20
    car4(i+20,:)=car2(im1);
    close all
end
figure,subplot(121),imshow(imread(im1))
subplot(122),bar(mean(car4(21:40,:)))
```

Third image for classification

```
im1='D52.gif';

for i=1:20
    car4(i+40,:)=car2(im1);
    close all
end
figure,subplot(121),imshow(imread(im1))
subplot(122),bar(mean(car4(41:60,:)))
```

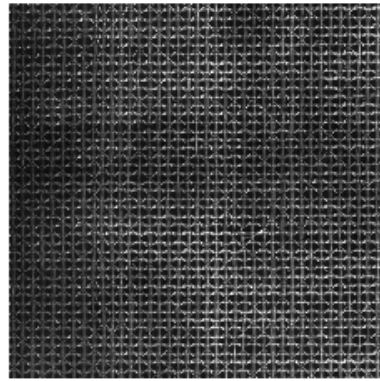# Fourth image for classification

```
im1='D49.gif';

for i=1:20
    car4(i+60,:)=car2(im1);
    close all
end
figure,subplot(121),imshow(imread(im1))
subplot(122),bar(mean(car4(61:80,:)))
```

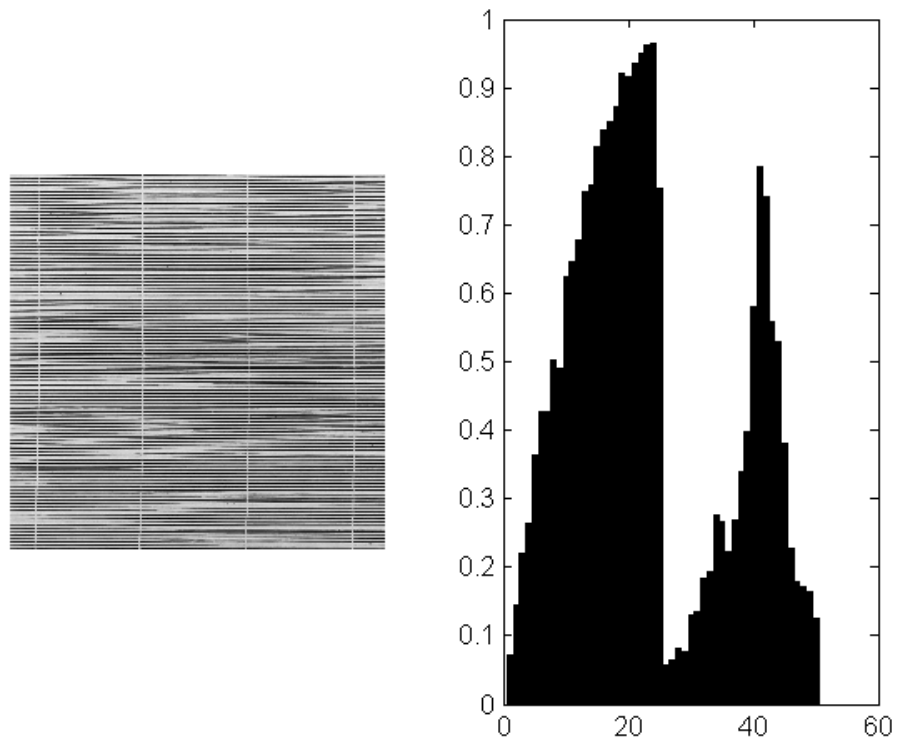# Fifth image for classification
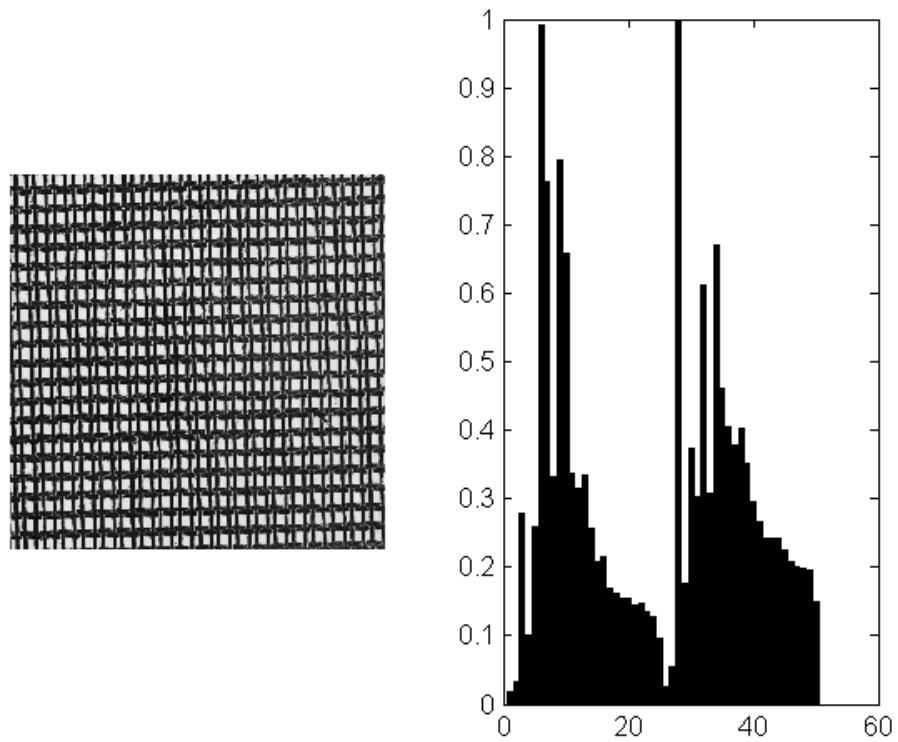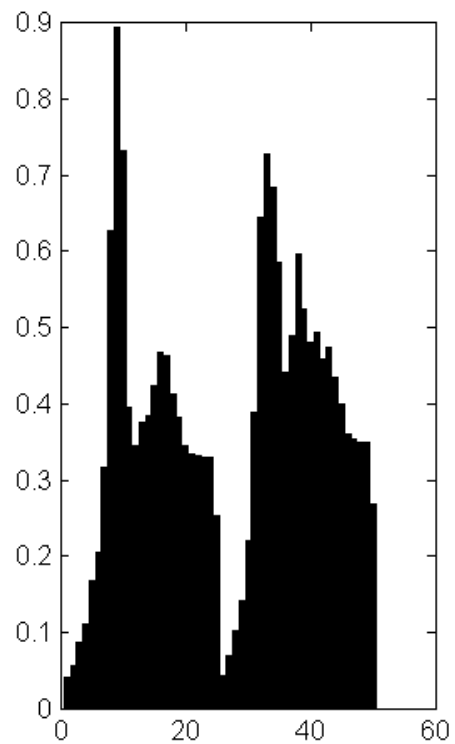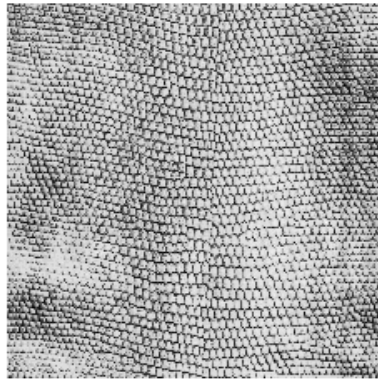
```
im1='D20.gif';

for i=1:20
    car4(i+80,:)=car2(im1);
    close all
end
figure,subplot(121),imshow(imread(im1))
subplot(122),bar(mean(car4(81:100,:)))
```

Sixth image for classification

```matlab
im1='D3.gif';

for i=1:20
    car4(i+100,:)=car2(im1);
    close all
end
figure,subplot(121),imshow(imread(im1))
subplot(122),bar(mean(car4(101:120,:)))
```

Mahalanobis distance to classes

Here the program evaluates the Mahalanobis distance for each observation to each class

```
dist=zeros(120,6);
for i=1:120
    dist(i,:)=mahal(X,car4(i,:));
end

figure(3), subplot(321),bar(dist(:,1)),title('Distance to class 1 [1,200]')
subplot(322),bar(dist(:,2)),title('Distance to class 2 [201,400]')
subplot(323),bar(dist(:,3)),title('Distance to class 3 [401,600]')
subplot(324),bar(dist(:,4)),title('Distance to class 4 [601,800]')
subplot(325),bar(dist(:,5)),title('Distance to class 5 [801,1000]')
subplot(326),bar(dist(:,6)),title('Distance to class 6 [1001,1200]')
```
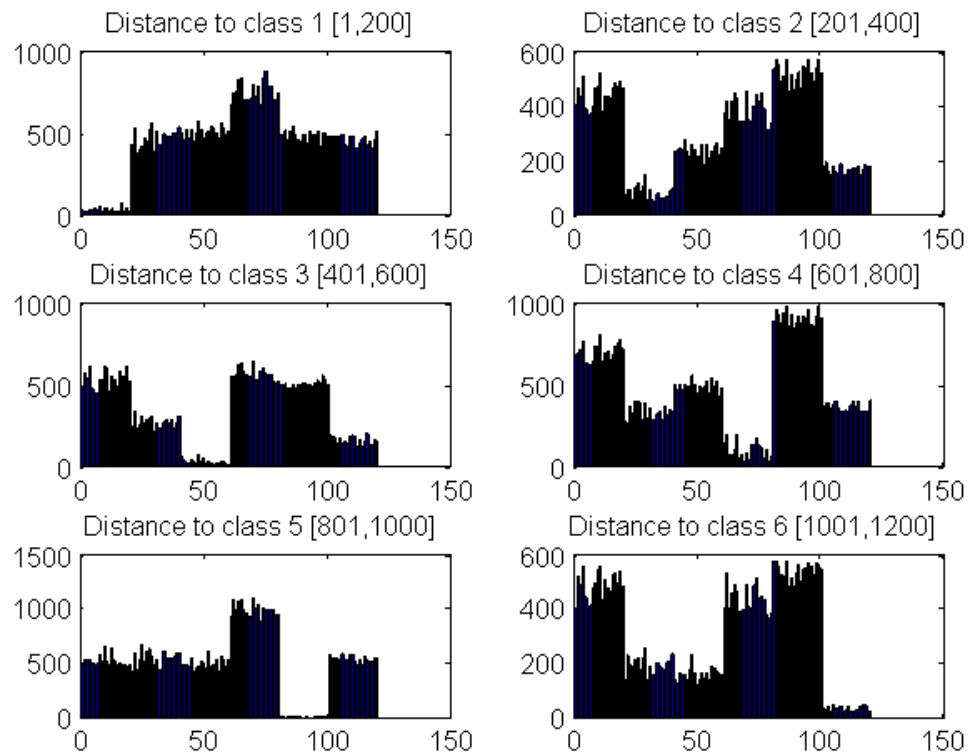
Evaluation algorithm

Campares the tagged vector from the predictor to the real tag that it should have depending on the class

```
comp=cell(120,3);
eva=zeros(120,1);
for i=1:120
    comp(i)={predict(X,car4(i,:))};
end

 for i=1:20
    if strcmp(comp{i},'class 1, D101')==0
        eva(i)=1;
    end
 end

 for i=1:20
    if strcmp(comp{i+20},'class 2, D1')==0
        eva(i+20)=1;
    end
 end

  for i=1:20
    if strcmp(comp{i+40},'class 3, D52')==0
        eva(i+40)=1;
    end
```

```
end

for i=1:20
  if strcmp(comp{i+60},'class 4, D49')==0
      eva(i+60)=1;
  end
end

for i=1:20
  if strcmp(comp{i+80},'class 5, D20')==0
      eva(i+80)=1;
  end
end

for i=1:20
  if strcmp(comp{i+100},'class 6, D3')==0
      eva(i+100)=1;
  end
end
```

Result

Error Percentage

```
t=sum(eva)/1.2
```

```
t =

     0
```

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