

# Pattern Recognition Laboratory – Assignment #2 Optimal Bayes Classification

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## 1) Mean and median comparison:

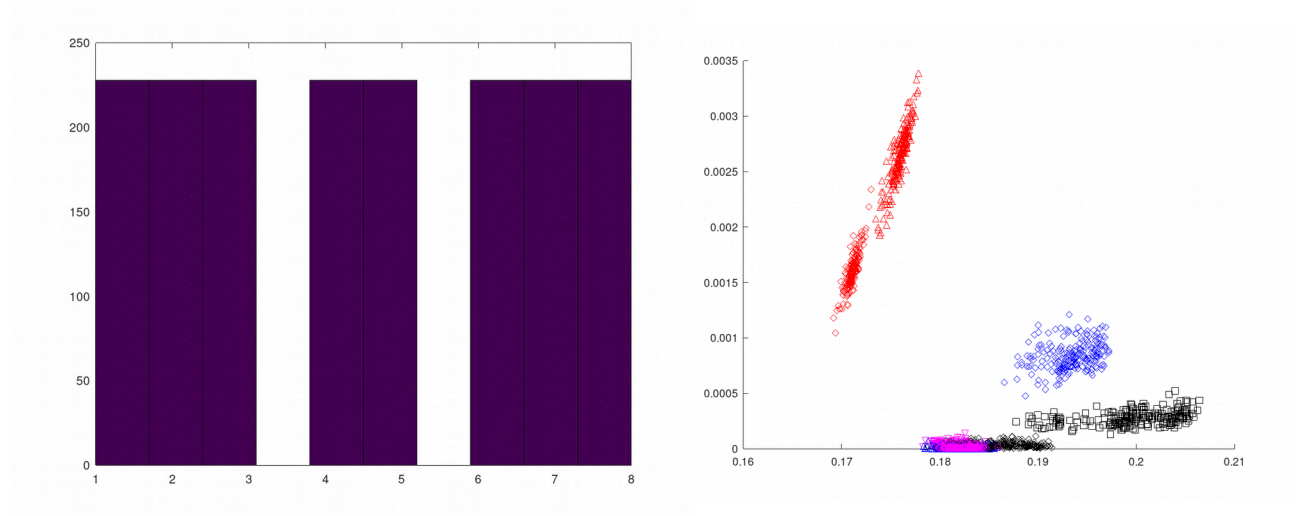
```
[mean(train); median(train)]
ans =

    4.5000e+00    1.8679e-01    1.4839e-02    2.1045e-01    2.0882e-01    7.9658e+01    1.0604e+00    9.0846e-03
    4.5000e+00    1.8259e-01    1.4785e-04    1.7434e-04    1.9996e-06   -8.9358e-11    1.3626e-10   -1.8427e-14

[mean(test); median(test)]
ans =

    4.5000e+00    1.8404e-01    6.9109e-04    9.4984e-04    1.5044e-05   -7.5376e-10    2.9695e-07   -9.6408e-11
    4.5000e+00    1.8239e-01    1.5634e-04    6.3343e-04    1.9781e-06   -8.7613e-11    8.6049e-11   -2.6647e-15
```

## Graphics:



## 2) The features 2 and 3 got the next results:

```
base_ercf =

    0.17818    0.17873    0.21765
```

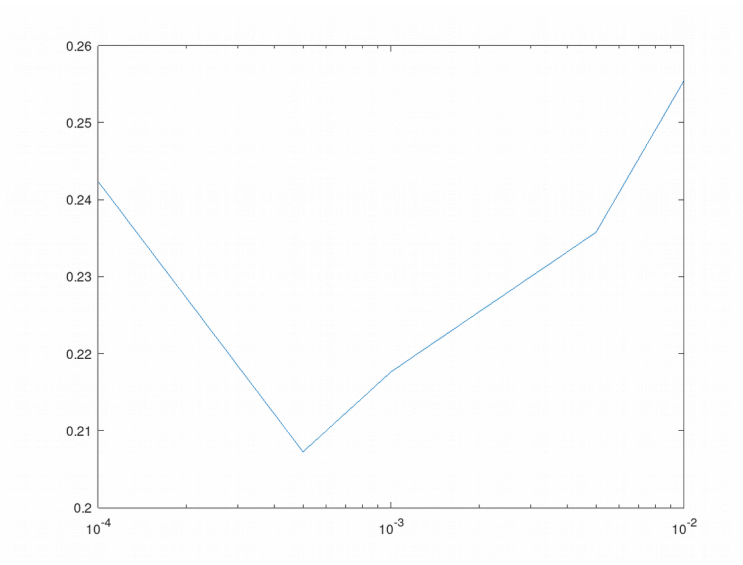
## 3) mean (err) % mean of the error coefficient

```
ans =

    0.25833    0.23542    0.23366
```

If the percent of the training set is higher, the error coefficient decreases, this means the classification is better

4) If the width of the windows is high, the error coefficient is also high



5)

Error with normal apriori values:

errcls = 0.23849

Error with doubled apriori values:

errcls = 0.23465

6)

The 1-NN has a lower error coefficient than the parzen window classifier:

```
err = mean(res != train_norm(:,1))
```

```
err = 0.20692
```

The result of normalizing and not normalizing the data is the same

```
base_ercf(1)
```

```
ans = 0.17818
```

```
mean(bayescls(test_norm(:,2:end), @pdf_indep, pdfindep_para) !=  
test_norm(:,1) )
```

```
ans = 0.17818
```

