

PRACTICAL 4-VISUAL SOLUTIONS

Machine learning and Pattern recognition

DISCLAIMER: PLEASE BE AWARE THAT YOUR RESULTS MAY BE SLIGHTLY DIFFERENT DEPENDING ON YOUR PARAMETERS, ETC.. THIS IS JUST FOR VISUAL HELP.

TASK 1: NEAREST NEIGHBOUR CLASSIFIER

STEP 3: Acc=1 (100%).

TASK 2: K-NEAREST NEIGHBOUR EXTENSION

STEP 2: $k=1 \rightarrow \text{Acc}=1$

$K=3 \rightarrow \text{Acc}=1$

$K=5 \rightarrow \text{Acc}=1$

$K=10 \rightarrow \text{Acc}=1$

TASK 3: BINARY SVM CLASSIFIER

STEP 3: Acc=1

(SVM_v2 $\rightarrow \text{Acc}=1$)

TASK 4: MULTICLASS CLASSIFICATION

STEP 3: NN $\rightarrow \text{Acc}=0.835$

3-NN $\rightarrow \text{Acc}=0.830$

5-NN $\rightarrow \text{Acc}=0.850$

Please remember that the two hour duration of a practical class will probably not be enough time to complete all sections. There is an expectation that you will work outside of class as an independent learner.

10-NN \rightarrow Acc=0.855

SVM \rightarrow Acc=0.9050

TASK 5: FROM CLASSIFICATION TO DETECTION: SLIDING WINDOW

STEP 4: with previous SVM \rightarrow Acc=0.38

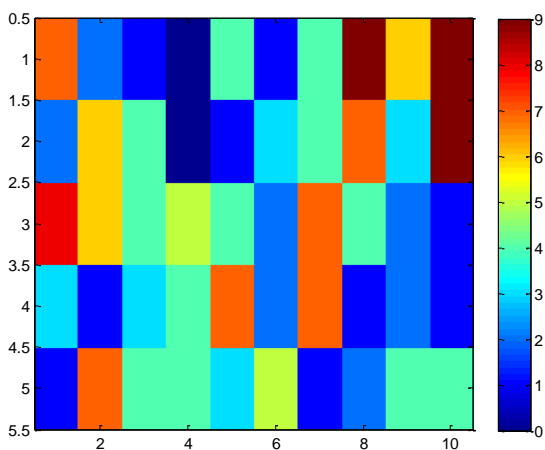
STEP 5: Acc= 0.780

solutionImage =

```

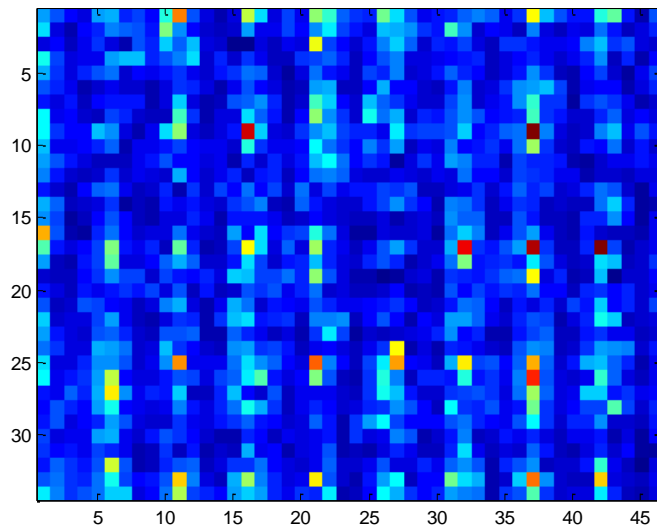
7  2  1  0  4  1  4  9  6  9
2  6  4  0  1  3  4  7  3  9
8  6  4  5  4  2  7  4  2  1
3  1  3  4  7  2  7  1  2  1
1  7  4  4  3  5  1  2  4  4
    
```

Graphically:



STEP 7:

Map image:



Filtered solution image:

