

## SUBMISSION

Each student must work independently. Please upload a file called *Assignment1\_Surname\_ID.zip* (where *Surname* is the surname of the student that submits the file and *ID* is the enrollment number) on moodle.

This file should contain:

- *Assignment1\_Surname.pdf*, a *pdf* file containing the solution to all the exercises (see below for further informations)
- The Matlab code in a subfolder called *Code*. Students can create any functions that they consider necessary to solve the problems.

The submission deadline is on the 23.06.2017 at 23.59.

### HW1\_Surname.pdf.

- Students need to provide a *pdf* file containing the solution to all the exercises. Students must clearly indicate in this file to which exercises and to which question the solutions refer to.
- For *Exercise1.a – b*) report learned parameter values as well as optimal values of  $p_1$  and  $p_2$  for  $k = 2$  and  $k = 5$ .
- For *Exercise1.c*) attach the required plots.
- For *Exercise2.*) report the optimal  $d$  value, its classification error and confusion matrix. Also attach a plot of classification errors when varying  $d$  from one to sixty.
- For *Exercise3.a – b*) attach the resulting plots.

### Subfolder Code.

- For *Exercise1* provide a matlab function *Exercise1.m*. The input to this function is  $k$  and it's output is the cell array *par*.
- For *Exercise2* provide a matlab function *Exercise2.m*. The input to this function should be  $d_{max}$  which is 60 in this exercise. The outputs of this function should be a plot of classification errors (from  $d = 1$  to  $d_{max}$ ), optimal value of  $d$  and its classification error and the confusion matrix.
- For *Exercise3* provide a matlab functions *Exercise3\_kmeans.m* and *Exercise3\_nubs.m*. The inputs to *Exercise3\_kmeans.m* are the motion data, the initial cluster label and the number of clusters. You can't use the matlab function "kmeans". The inputs to *Exercise3\_nubs.m* are the motion data and the number of clusters. The outputs of both function are the 3 plots required in *Exercise3.a – b*).

## NOTES

- Do not include the provided datasets in you submission.
- We will mark the assignment even if you forget to press the submit button.