Human-centered Assistive Robotics Technische Universität München Prof. Dr.-Ing. Dongheui Lee	**MACHINE LEARNING IN ROBOTICS** Assignment1 Instructions

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 Matrikelnummer) 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 03.07.2019 at 23:59.

Assignment1_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 $p1$ and $p2$ 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 centers 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.