Human-centered Assistive Robotics Technische Universität München Prof. Dr.-Ing. Dongheui Lee	**MACHINE LEARNING IN ROBOTICS** Assignment 2

Exercise 1: *Learning dataset using Gaussian mixture model*

Given $dataGMM.mat$ (2 dimensions x 300 samples): Write a Matlab code that loads the data set and trains a Gaussian Mixture model. The number of components used in GMM is equal to 4.

a) Initialize the GMM parameters with the k-means algorithm (from Matlab Toolbox or from the previous assignment).

b) Implement Expectation–Maximization estimation of GMM parameters.

Hint: Depending on your initialization of the k-means algorithm, your results might differ a litte bit. You can evaluate your results by plotting the means and covariance ellipses for the initial state and after a number of iterations. You should then see how the Gaussians components approximate the dataset.