DA311 Machine Learning Lab

Assignment 6

Date: September 12th, 2023

Task A

Given a dataset "**data.csv**", your task is to:

1. Learn the parameters of the Gaussian Mixture Model (GMM) with 3 components using the Maximum likelihood method discussed in class. You may consider the component weights to be $\frac{1}{3}$ each and covariance matrices as identity. It is preferred to use mean vectors as $[0, 0]$, $[-2, 2]$, and $[2, 2]$.
2. Plot the curve for log-likelihood across iterations.
3. Display the learned mean vectors, covariance matrices, and component weights upon convergence.

Task B

Given the parameters of the learned Gaussian Mixture Model in **Task A**, for a set of test points,

$$\text{Test Points: } [-1.5, 1.8],\ [1, 1],\ [-2, -1],\ [3, 3],\ [0, 2.5].$$

Compute the probability of each test point with regard to the GMM components.