EE5601: Representation Learning, Fall 2020 (34)

Indian Institute of Technology Hyderabad

HW 1, Assigned: Monday 26.10.2020.

Due: Saturday 31.10.2020 at 11:59 pm.

Note: The name of your Jupyter notebebook submission should follow the convention `roll-no-hw1.ipynb`.

1. Implement the Expectation Maximization (EM) algorithm for estimating the parameters of a Gaussian Mixture Model (GMM). Follow the notation in class and assume that the number of mixtures K is input to your program along with the data points $X = \{\mathbf{x}_1, \mathbf{x}_2, \ldots, \mathbf{x}_N\}$. You are expected to generate X yourself and experiment with various choices of the ground truth parameters θ_{gt}. Your program must output the estimated parameters θ after each update and at convergence. (20)