ML Report

Expectation Maximization Algorithm

Course No: CSE 472

Course Name: Machine Learning Sessional

Name: Md. Rukshar Alam

Student ID: 1305031

1) Why should you use a Gaussian mixture model (GMM) in the above scenario?

Answer: We use Gaussian mixture model (GMM) here. It constitutes data points in 2 dimensional space. They create clusters around a mean point. These are Gaussian distribution with different means and standard deviations.

2) How will you model your data for GMM?

Answer: I will use GMM. I create a list of x1 and x2 variables. Here x1 and x2 are the two of date points. Then k, the number of the Gaussian distributions, is selected. The EM algorithm determines the probability of data points belonging to a particular distribution iteratively. The mean,weights and covariance matrices are also updated. The means ,covariance and k are initialized along with the weights of each distribution.

3) What are the intuitive meaning of the update equations in **M step**?

Answer: We begin by initializing the mean, covariance and weights . In the E step, the mean, covariance and weight matrices are used to calculate the probability of data points from different distributions. In the M-step the probabilities are used to update the parameters mean, covariance and weights for the next iteration.

Answer: