[30 min] DISCUSS: Expectation - Maximization Framework

What do we calculate in Expectation step ? Explain the intuition in max 10 sentences.

When looking at the expectation-maximization algorithm, the algorithm is finding the local maximum likelihood. In this algorithm, we calculate two main steps, which is expectation and maximization. In the expectation step, we are calculating P(Ck|xi), which is the probability of ith data point in kth cluster. We do this by calculating the posterior probabilities of the latent variables that are observed and current estimates. The intuition of doing this iteratively is to update our model, which will create kth normal distributions for each cluster. By doing so, we can predict the probability that a specific data point belongs to a cluster by softly assigning each data point to each cluster to help better improve the distribution curves. This combined with the maximization step helps improve the model and creates a model that is effective in classifying unseen data points.