**Day 13 — 7 July 2025 (Monday)**

**Topic: Naïve Bayes Theory & Probability Concepts**

Today we studied the mathematical foundation behind the **Naïve Bayes classifier**. The instructor explained how probability and conditional independence allow fast text classification. We learned about **prior probability, likelihood, posterior probability**, and **Bayes Theorem**. The concept of word frequency contributing to spam prediction became clearer. I also explored why Naïve Bayes performs exceptionally well in text-based applications like email filtering.

**Important Formula Learned:**

We tested a few text sentences manually and verified probability behavior for spam keywords like "win", "free", "offer", etc.