

1. AI (Artificial Intelligence)

- **Topic Summary:**

AI is the broadest field that includes anything related to making machines behave like humans.

- **In Simple Words:**

Think of **AI** as the "parent" of both **ML** and **DL**. It's about designing machines to do things that usually require human intelligence — like decision-making, recognizing speech, or understanding images.

➤ Example: Siri or Alexa understanding and replying to your questions.

➤ **Notes:**

- AI is often confused with ML and DL, but it's the bigger picture.
 - Right now, AI can recognize patterns but **can't yet think creatively** or **feel emotions** like a human.
-

2. ML (Machine Learning)

- **Topic Summary:**

ML is a **subset of AI**. It allows machines to **learn from data** and improve without being manually programmed each time.

- **In Simple Words:**

ML is like teaching a machine by giving it lots of examples instead of rules. Over time, it figures things out on its own.

➤ Example: Netflix recommending shows based on what you watched before.

➤ **Notes:**

- Older methods like expert systems failed in complex or uncertain situations.
 - ML is better than traditional (symbolic) AI because it **learns patterns** from data rather than needing everything told step-by-step.
-

3. DL (Deep Learning):

- **Topic Summary:**

DL is a **subset of ML**, especially good for **large amounts of data**. It mimics the human brain using neural networks.

- **In Simple Words:**

Deep Learning is like **machine learning on steroids**. It uses layers of “digital

neurons” to learn **very complex things** — like recognizing faces or translating languages — without needing a human to tell it what features to look for.

➤ Example: Facebook automatically tagging your friends in photos.

➤ **Extra Notes from Timeline:**

- Inspired by the way our **brain’s neurons work**.
 - DL is popular because it can **figure out features by itself** (no manual work).
 - More layers = better learning (but also more data and time needed).
 - Both **ML and DL** are key tools inside AI.
-

❖ **Final Analogy:**

Imagine **AI** is a full toolbox.

ML is a powerful drill inside it.

DL is a smart robotic drill that can adjust itself and work faster with more power.
