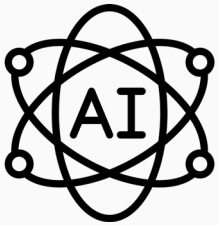


4 Days Workshop on

Artificial Intellegence

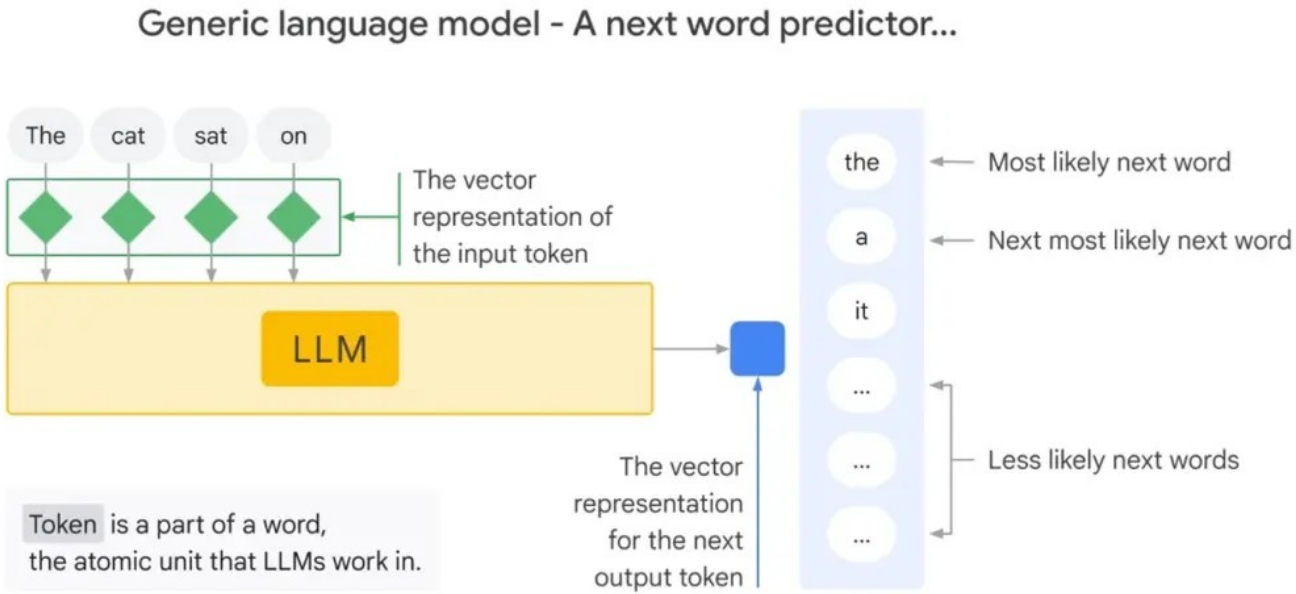
Introduction to LLM

What is LLM, How do they work, How are they trained, How to use them ?

What are LLMs ?

- Deep learning models trained on massive text datasets.
- Learn to predict the next word in a sentence.
- Can generate, summarize, translate, and answer questions.
- Examples: GPT, LLaMA, Claude, Gemini.

How LLMs work ?



How LLMs work ?

- Given: “The cat sat on the…” → model predicts: “mat”
- Do this billions of times across internet-scale data. Eventually they learn grammer, logic, factual knowledge, style and tone.
- It’s not memorizing, it’s learning patterns.
- Given text is converted into tokens, each token is converted into vectors, LLM uses attention to process all token at once and predics the next token one at a time.
- Predicting next word is powerful, because it requires understanding the topic, maintains tone and structure and handles logic reasoning and even some math.
- So bacically Super AutoComplete.

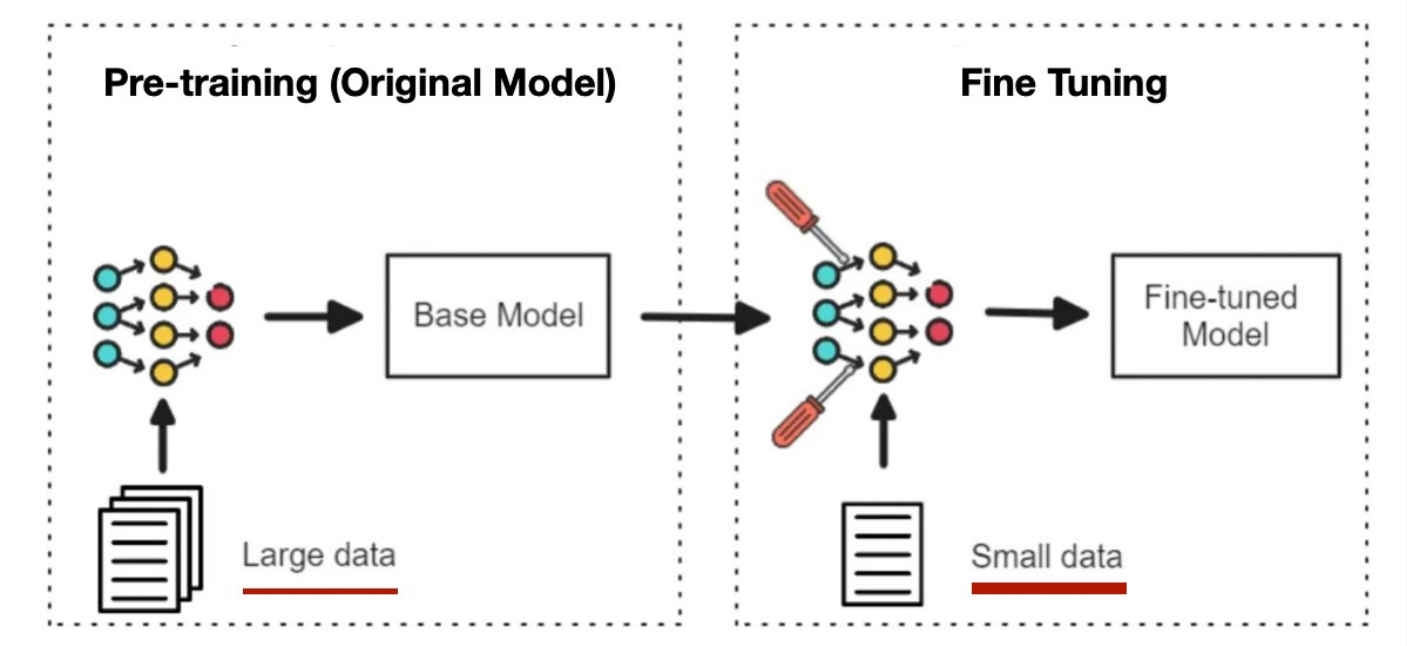
Prompt Engineering

- Prompt is just text input to guide the AI's response.
- Clear, specific prompts give better and more accurate results.
- Adding context like role, goal, or examples helps AI understand intent.
- Breaking tasks into steps improves reasoning and output quality.
- Good prompting is trial and error — refine until it works well.
- Explore more at promptingguide.ai

Problems with LLMs

- LLMs can’t access your private, recent, or external data.
- They often make up facts or hallucinate confidently.
- Updating their knowledge requires costly retraining or fine-tuning.
- They struggle with long documents or large context windows.
- Answers are not grounded — you don’t know where the info came from.

Fine Tuning


Pre-training (Original Model)
Base Model
Large data
Fine Tuning
Fine-tuned Model
Small data

RAG

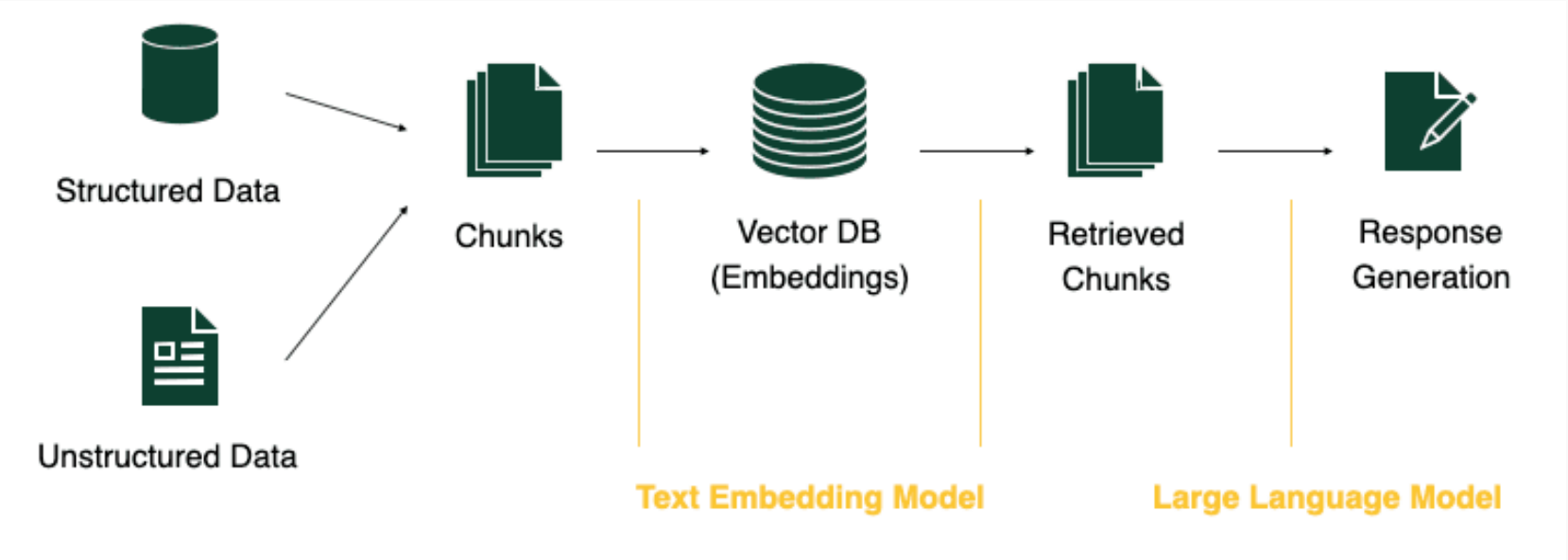
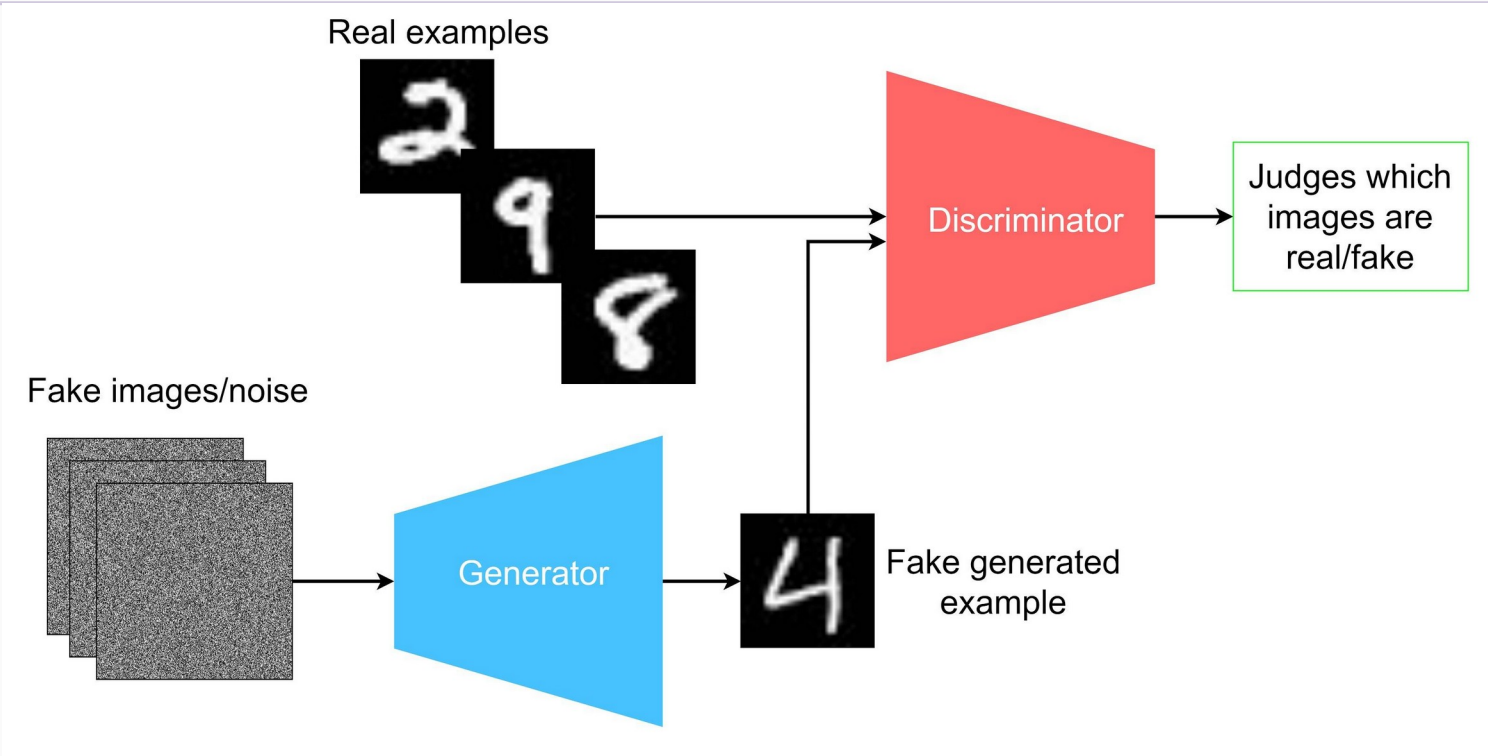

Structured Data
Unstructured Data
Chunks
Vector DB
(Embeddings)
Retrieved
Chunks
Response
Generation
Text Embedding Model
Large Language Model

Image Generation

How image generation algorithms work

Generative Adversarial Networks



Diffusion based models