(TR-103) PROMPT ENGINEERING –

Training Day 2 Report:

What is Generative AI?

Generative AI refers to a type of Artificial Intelligence that can generate new content like text, images, music, or code — instead of just analyzing existing data.

What it does?

- Learns patterns from existing data
- Then creates new data that looks similar

Examples:

- ChatGPT (generates human-like text)
- DALL·E (creates images from text)

Architecture of Generative AI:

1. **Prompt (Input Layer):**
   - ➢ This is the starting point.
   - ➢ A user gives input such as:
     - ▪ Text (e.g., "Write a poem about space")
     - ▪ Image instruction (e.g., "Generate a logo for AI startup")
     - ▪ Audio (for transcription)
   - ➢ This gets tokenized or embedded (converted to numbers).
2. **Model (Core Model Layer):**
   - ➢ The brain of Generative AI.
   - ➢ Based on the prompt, the model:
     - ▪ Understands the intent.
     - ▪ Uses its learned knowledge.
     - ▪ Predicts the next word, image pixel, or code line.
3. **Generated Output (Decoder Layer):**
   Final result based on the prompt:

- Text (essay, email, poem)
- Image (art, illustration)
- Code (program)
- Audio (speech synthesis)

Difference Between Traditional AI and Generative AI:

Feature	Traditional AI	Generative AI
Goal	Predict, classify, or analyze	Create new content
Nature	Predictive	Generative
Model Types	Decision Trees, SVM, Regression	Transformers, GANs, Diffusion Models
Output	Labels, decisions, scores	Text, images, code, music, etc.
Examples	Spam filter, fraud detection	ChatGPT, DALL·E, Copilot, music/image generators
Data Usage	Learns patterns and applies them to known tasks	Learns patterns and generates similar or new content

Diffusion Model:

A Diffusion Model is used in generative AI for images. It learns to generate pictures by gradually removing noise from random data.

How It Works:

- Start with pure noise.
- The model learns how to reverse the noise step-by-step.
- Slowly turns it into a realistic image.

Example:

DALL·E and Stable Diffusion

LLM-based Models (Large Language Models):

LLMs are powerful models trained on huge amounts of text to understand and generate language.

Features:

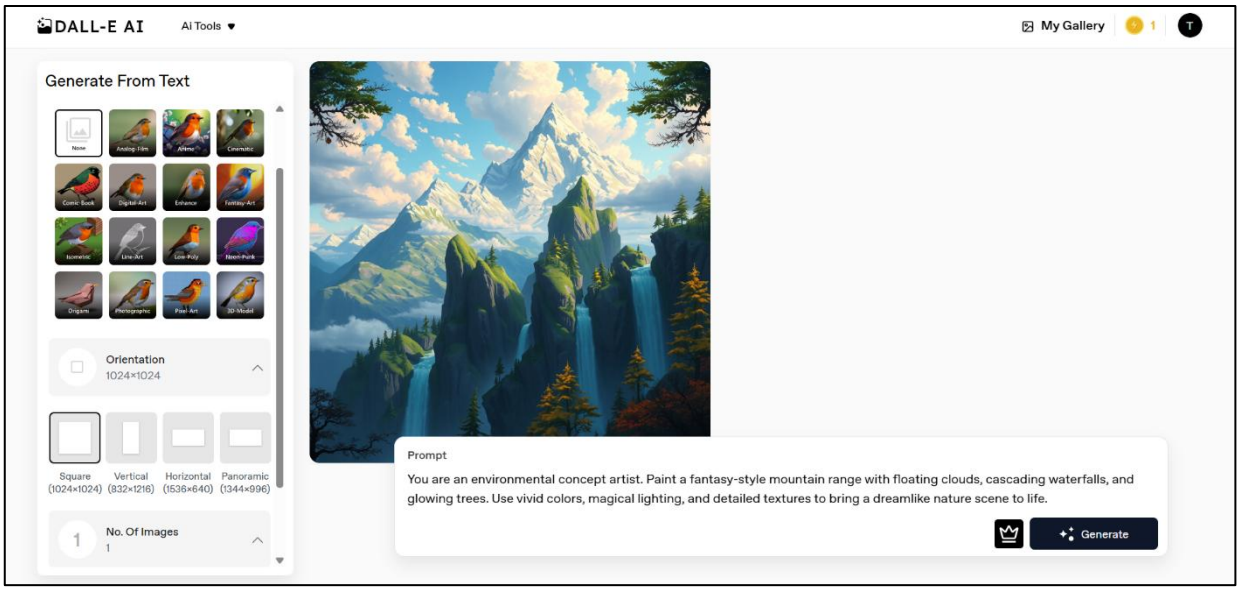
- Based on Transformer architecture.
- Understand context, grammar, logic, reasoning.
- Generate long, meaningful responses.

Examples of LLM-Based Models by Use Case:

1) **General Purpose LLMs (Text Understanding & Generation):**
    - GPT-3.5 / GPT-4.0 – by OpenAI
        - Used for writing, reasoning, summarizing, conversation, and more.
    - Gemini 1.5 – by Google
        - Advanced Q&A, reasoning, and multimodal support (text, image, code).
    - Claude 3 – by Anthropic
        - Focused on education, safe AI, helpful answers, and ethical use.
2) **Research-Oriented LLMs:**
    - LLaMA 3 – by Meta
        - Open-source model used for academic research and custom fine-tuning.
3) **Speech Recognition LLMs:**
    - Whisper – by OpenAI
        - Converts speech to text (speech-to-text transcription).
    - Google Speech-to-Text – by Google
        - Used in apps for real-time voice input, accessibility, and transcription.
4) Code Generation & Debugging LLMs:
    - Codex – by OpenAI
        - Generates and debugs code from natural language.
    - GitHub Copilot – by GitHub (powered by Codex)
        - Code suggestions in real-time inside coding environments like VS Code.

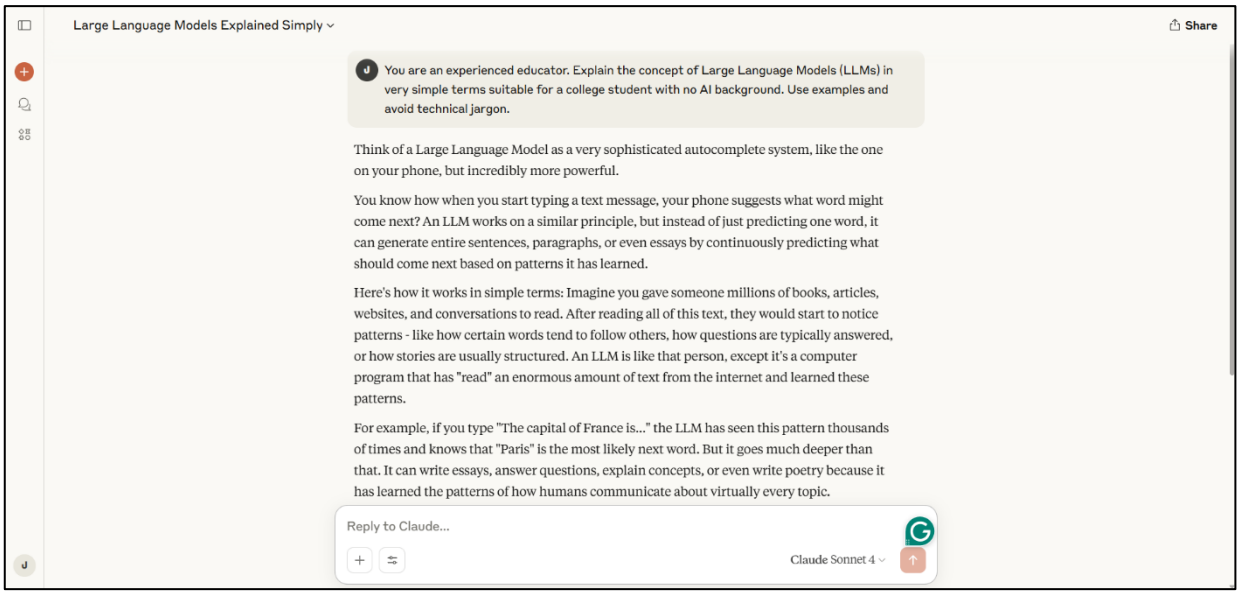
Task: Real Time Implementation of models.

DALL-E AI:

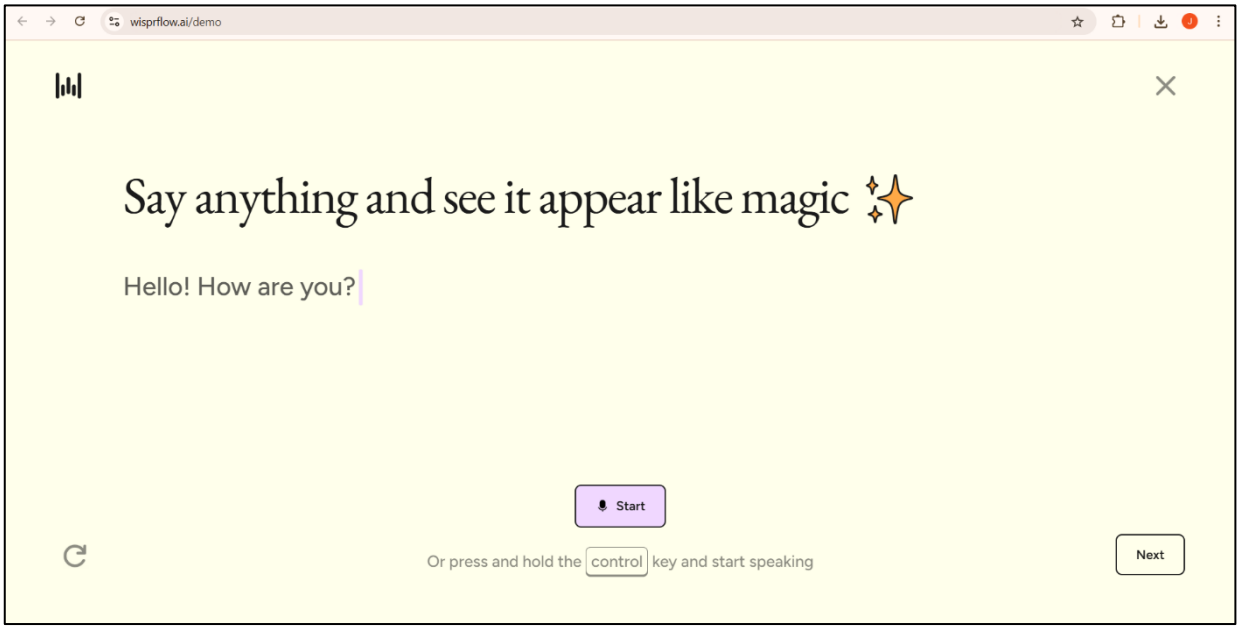


Copilot:

Claude:


Large Language Models Explained Simply
Share
You are an experienced educator. Explain the concept of Large Language Models (LLMs) in very simple terms suitable for a college student with no AI background. Use examples and avoid technical jargon.
Think of a Large Language Model as a very sophisticated autocomplete system, like the one on your phone, but incredibly more powerful.
You know how when you start typing a text message, your phone suggests what word might come next? An LLM works on a similar principle, but instead of just predicting one word, it can generate entire sentences, paragraphs, or even essays by continuously predicting what should come next based on patterns it has learned.
Here's how it works in simple terms: Imagine you gave someone millions of books, articles, websites, and conversations to read. After reading all of this text, they would start to notice patterns - like how certain words tend to follow others, how questions are typically answered, or how stories are usually structured. An LLM is like that person, except it's a computer program that has "read" an enormous amount of text from the internet and learned these patterns.
For example, if you type "The capital of France is..." the LLM has seen this pattern thousands of times and knows that "Paris" is the most likely next word. But it goes much deeper than that. It can write essays, answer questions, explain concepts, or even write poetry because it has learned the patterns of how humans communicate about virtually every topic.
Reply to Claude...
Claude Sonnet 4

Whisper:


wisprflow.ai/demo
Say anything and see it appear like magic ✨
Hello! How are you?
Start
Or press and hold the control key and start speaking
Next