

Generative AI

1. Introduction to Generative AI & LLMs

- What is Generative AI and how it differs from traditional AI
 - Overview of large language models (LLMs) like GPT, Claude, Gemini
 - Real-world applications: chatbots, assistants, content creation, automation
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2. Foundations of Large Language Models (LLMs)

- Architecture basics: Transformers and self-attention
 - How LLMs are trained and why they generate human-like text
 - Tokenizers, embeddings, and model output generation
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3. Neural Network Basics for Generative AI

- Deep learning basics: neurons, layers, activation
 - Role of deep networks in GenAI
 - Connection to NLP and content generation
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4. Text Representation & Tokenization

- Word embeddings and vector representations
 - Tokenization processes: BPE, WordPiece, SentencePiece
 - Understanding context and positional encoding
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5. Prompt Engineering Fundamentals

- What prompts are and why they matter
- Prompt formats: zero-shot, one-shot, few-shot
- Crafting effective initial prompts to guide LLM output

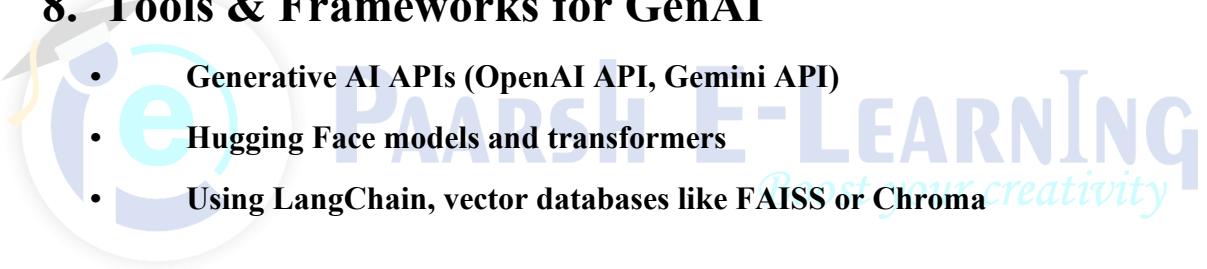
6. Advanced Prompt Engineering Techniques

- Chain-of-thought prompting
 - Role-based and structured prompts
 - Prompt debugging and optimization strategies
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7. Retrieval-Augmented Generation (RAG)

- What RAG is and when to use it
 - Combining retrieval systems with LLMs
 - Building RAG pipelines for better accuracy and grounding
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8. Tools & Frameworks for GenAI

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- Generative AI APIs (OpenAI API, Gemini API)
 - Hugging Face models and transformers
 - Using LangChain, vector databases like FAISS or Chroma
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9. AI Content Creation — Text, Images & Multimedia

- Generating text content (stories, articles, summaries)
 - Introduction to multimodal GenAI (images, audio)
 - Combining models for rich content generation
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10. Evaluation, Metrics & Model Performance

- Evaluating AI output quality
 - Understanding repetition, coherence, factual accuracy
 - Metrics for text generation and content quality
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11. Ethics, Bias & Responsible GenAI

- Ethical considerations in content generation
 - Mitigating biases and harmful outputs
 - Responsible deployment practices
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12. Generative AI Deployment & APIs

- Integrating GenAI into applications
 - Hosting models and API consumption
 - Basic security and cost control
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13. Industry Use Cases & Applications

- Business automation with GenAI
 - AI in marketing, education, customer support
 - Case studies and success stories
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- The logo for Paarsh E-Learning features a stylized 'e' icon composed of blue and yellow segments. To the right of the icon, the word 'PAARSH' is written in large, bold, blue capital letters. Below 'PAARSH', the words 'E-LEARNING' are written in a smaller, blue, sans-serif font. Underneath 'E-LEARNING', the tagline 'Boost your creativity' is written in a smaller, italicized, light blue font.

14. Hands-on Projects & Capstone Development

- Build an LLM-powered chatbot or assistant
 - Prompt engineering portfolio
 - Content creation workflows and evaluation
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