

Generative AI and Prompt Engineering

Course Content

Lesson 1 - Introduction to Generative AI

- Overview of generative models
- History and evolution
- Applications

Lesson 2 - Fundamentals of Large Language Models

- Transformer architecture
- Attention and self-attention
- Model scaling

Lesson 3 - Prompt Engineering Principles

- Prompt anatomy
- Prompt design patterns
- Prompt testing

Lesson 4 - Designing Effective Prompts

- Chain-of-thought prompting
- Few-shot prompting
- Role-based prompting

Lesson 5 - Evaluation of Prompt Outputs

- Human evaluation
- Automatic evaluation
- Bias detection

Lesson 6 - Fine-tuning Pre-trained Models

- Supervised fine-tuning
- Reinforcement learning with human feedback (RLHF)
- Ethical guardrails

Lesson 7 - Safety and Ethics in Generative AI

- Hallucinations
- Bias mitigation
- Safety frameworks

Lesson 8 - Case Studies of Generative AI Applications

- Content generation
- Conversational AI
- Code generation

Lesson 9 - Prompt Engineering for Different Domains

- Healthcare
- Legal
- Education

Lesson 10 - Deploying Generative AI Systems

- Infrastructure for GenAI
- API deployment
- Governance

Capstone Project

- Develop, test, and deploy a generative AI solution with prompt-based interfaces.