Day 1

INTRO:

Today you’ll explore the evolution of LLMs, from transformers to techniques like fine-tuning and inference acceleration. You’ll also get trained in the art of prompt engineering for optimal LLM interaction.

The code lab will walk you through getting started with the Gemini API and cover several prompt techniques and how different parameters impact the prompts.

Foundational LLMs & Text Generation  
Whitepaper : <https://www.kaggle.com/whitepaper-foundational-llm-and-text-generation>

Podcast : <https://www.youtube.com/watch?v=mQDlCZZsOyo>

Prompt Engineering  
Whitepaper: <https://www.kaggle.com/whitepaper-prompt-engineering>

Podcast : <https://www.youtube.com/watch?v=F_hJ2Ey4BNc>

Exercises:  
<https://www.kaggle.com/code/markishere/day-1-prompting>  
  
Google AI Studio (for Gemini API Key) : <https://aistudio.google.com/app/apikey>

My Notebook : <https://www.kaggle.com/code/geek02/genai-day-1-prompting>

Tools:

<https://textfx.withgoogle.com/>

<https://sql-talk-r5gdynozbq-uc.a.run.app/>

<https://notebooklm.google/> //Worth it, notably that audio generation feature.

Day 2

INTRO:

Today you will learn about the conceptual underpinning of embeddings and vector databases and how they can be used to bring live or specialist data into your LLM application. You’ll also explore their geometrical powers for classifying and comparing textual data.

Embeddings and Vector Stores/Databases

Whitepaper : <https://www.kaggle.com/whitepaper-embeddings-and-vector-stores>

Podcast : <https://www.youtube.com/watch?v=1CC39K76Nqs>

Exercises:

<https://www.kaggle.com/code/markishere/day-2-document-q-a-with-rag>

<https://www.kaggle.com/code/markishere/day-2-embeddings-and-similarity-scores>

<https://www.kaggle.com/code/markishere/day-2-classifying-embeddings-with-keras>

My Notebooks:

Document Q&A with RAG using Chroma

<https://www.kaggle.com/code/geek02/genai-day-2-document-q-a-with-rag>

Embeddings and similarity scores

<https://www.kaggle.com/code/geek02/genai-day-2-embeddings-and-similarity-scores>

Classifying embeddings with Keras and the Gemini API

<https://www.kaggle.com/code/geek02/genai-day-2-classifying-embeddings-with-keras>

Tools:

Chroma : <https://docs.trychroma.com/>

Day 3

INTRO:

Learn to build sophisticated AI agents by understanding their core components and the iterative development process.

The code labs cover how to connect LLMs to existing systems and to the real world. Learn about function calling by giving SQL tools to a chatbot, and learn how to build a LangGraph agent that takes orders in a café.

Generative AI Agents  
Whitepaper :<https://www.kaggle.com/whitepaper-agents>

Podcast : <https://www.youtube.com/watch?v=H4gZd4BCrDQ>

Exercises:

<https://www.kaggle.com/code/markishere/day-3-function-calling-with-the-gemini-api>

<https://www.kaggle.com/code/markishere/day-3-building-an-agent-with-langgraph/>

My Notebooks:

Function calling with the Gemini API

<https://www.kaggle.com/code/geek02/genai-day-3-function-calling-with-the-gemini-api>

Building an agent with LangGraph

<https://www.kaggle.com/code/geek02/genai-day-3-building-an-agent-with-langgraph>

Day 4

INTRO:

In today’s reading, you’ll delve into the creation and application of specialized LLMs like SecLM and MedLM/Med-PaLM, with insights from the researchers who built them.

In the code labs you will learn how to add real world data to a model beyond its knowledge cut-off by grounding with Google Search. You will also learn how to fine-tune a custom Gemini model using your own labeled data to solve custom tasks.

Domain-Specific LLMs

Whitepaper : <https://www.kaggle.com/whitepaper-solving-domains-specific-problems-using-llms>

Podcast : <https://www.youtube.com/watch?v=b1a4ZOQ8XdI>

Exercises:

<https://www.kaggle.com/code/markishere/day-4-google-search-grounding>

<https://www.kaggle.com/code/markishere/day-4-fine-tuning-a-custom-model>

My Notebooks:

Building an agent with LangGraph and the Gemini API

<https://www.kaggle.com/code/geek02/genai-day-3-building-an-agent-with-langgraph>

Google Search Grounding with the Gemini API

<https://www.kaggle.com/code/geek02/genai-day-4-google-search-grounding>

Fine Tuning a custom model

<https://www.kaggle.com/code/geek02/genai-day-4-fine-tuning-a-custom-model>

Day 5

INTRO:

Discover how to adapt MLOps practices for Generative AI and leverage Vertex AI's tools for foundation models and generative AI applications.

MLOps for Generative AI

Whitepaper : <https://www.kaggle.com/whitepaper-operationalizing-generative-ai-on-vertex-ai-using-mlops>

Podcast : <https://www.youtube.com/watch?v=k9S6IhiUUj4>

~~Exercises~~  Code Walkthrough:

<https://github.com/GoogleCloudPlatform/generative-ai/tree/main/gemini/sample-apps/e2e-gen-ai-app-starter-pack>