

GenAI Program: LLMs Courses

1. Getting Starting with LLMs
2. Building LLM applications using Prompt Engineering
3. Building Production Ready RAG systems using LlamaIndex
4. Finetuning LLMs
5. Training LLMs from Scratch

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Getting started with LLMs

Module No.	Module Name	Lesson Name
1	Evolution of NLP	Evolution of NLP: Pre Deep Learning
		Evolution of NLP: Deep Learning
		Tranformers
2	Introduction to LLMs	What is a language model?
		What is a large language model?
		Understanding Foundational Model
		Different types of LLMs: Continuing the text
		Different types of LLMs: Instruction Tuned
		Encoder LLMs, Decoder LLMs and Encoder Decoder LLMs
3	The Current State of the Art in LLMs	The Current State of the Art in LLMs
		What Next?

Building Production Ready RAG systems using LlamaIndex

Module No.	Module Name	Item/Lesson Name
1	Introduction to RAG systems	Why RAG systems?
		What is a RAG system?
		A brief overview of steps involved in a RAG Framework
		Quiz

2	Introduction to LlamaIndex	What is a LlamaIndex?
		Why LlamaIndex?
		Quiz
3	Components of LlamaIndex	Overview of Different Components of LlamaIndex
		Data Sources
		Indexing
		Embeddings
		VectorDBs
		Quiz
		LLMs
		Retrieval
		Decoupling chunks used for retrieval vs. chunks used for synthesis
		Adding Metadata
		Quiz
4	Code:Build your first QA system on private data	
5	Evaluation of RAG systems	Necessity of Evaluation
		Retrieval Evaluation
		Response Evaluation
		Quiz
6	Code: RAG + Evaluation	
7	Advanced approaches for powerful RAG system	Router Query Engine, SubQuestionQuery Engine
		Structured Retrieval for Larger Document Sets:Metadata filters + Auto Retrieval
		Document Hierarchies + Recursive Retrieval
		Finetuning Embeddings
		Finetuning with Retrieval Augmentation (RADIT)
8	Agents	
9	Building a powerful RAG system using LlamaIndex	

Finetuning LLMs

Module	Module Name	Item/Lesson Name
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No.		
1	Introduction to Finetuning LLMs	What is Finetuning LLMs?
		Why Finetuning LLMs?
		Research Papers and blogs for additional details
		Quiz
2	Understanding different finetuning techniques	Feature Extraction
		Retraining all parameters
		The problem with traditional methods
		Quiz
		Setting up the runpod instance
		Code Part1: Finetuning NLP usecase using feature extraction and full finetuning
		Code Part2: Finetuning NLP usecase using feature extraction and full finetuning
		Research Papers and blogs for additional details
3	Introduction to Parameter Efficient Finetuning Techniques	What is Parameter Efficient Finetuning Techniques?
		How PEFT addresses the issues with Full Fine-tuning
		Different types of PEFT methods
		Quiz
4	Prompt Tuning Techniques	Prompt Tuning
		Prefix Tuning
		Code:Finetuning NLP usecase using Soft Prompting Techniques
		Quiz
5	Adaptor Modules	(IA)3
		LoRA
		Quantization
		QLoRA
		AdaLoRA
		Scaling and combining multiple loras
		Code:Finetuning NLP usecase using PEFT LoRA
		Code: Finetuning instruction following LLM

		using PEFT
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Training LLMs from Scratch

Module No.	Module Name	Item/Lesson Name
1	Training LLMs from Scratch	Scaling laws
		Parallel and Distributed computing strategies
		Challenges involved in training LLMs
		Best practices to train LLMs
		How do you train LLMs from scratch?
		Project: Continuing text
		Project: Instruct optimized + RLHF
2	Evaluating LLMs	

Building LLM App using Prompt Engineering

Module No.	Module Name	Lesson Name
1	How to build LLM Applications?	Overview of different methods to build LLM applications
2	Introduction to Prompt Engineering	Why do we need Prompt Engineering?
		What is Prompt Engineering?
3	Prompt Engineering using ChatGPT API and Open Source LLM	Introduction to ChatGPT API
		Prompt Engineering with Open Source LLM
5	Understanding Different Prompt Engineering Techniques	Zero-shot Prompting
		Few-shot Prompting
		CoT Prompting
		Self Consistency
		ToT

		Advanced Prompt Engineering Techniques
6	Building LLM App using Prompt Engineering	