Intro to Generative AI

Introductory Course

Goal:

understand how LLMs are constructed, used, tuned and customized

The first part of course, Application through Production is aimed at developers, data scientists, and engineers looking to build LLM-centric applications with the latest and most popular frameworks. Additionally, it will cover the following topics:

* How to apply LLMs to real-world problems in NLP using popular libraries, such as Hugging Face and LangChain.
* How to add domain knowledge and memory into LLM pipelines using embeddings and vector databases.
* Understand the nuances of pre-training, fine-tuning, and prompt engineering, and apply that knowledge to fine-tune a custom chat model.
* How to evaluate the efficacy and bias of LLMs.
* How to implement LLMOps and multi-step reasoning best practices for an LLM workflow.
* How to monitor LLM through serving framework vLLM and llmlite

The second part of the course, LLMs: Foundation Models from the Ground Up is aimed at data scientists interested in diving into the details of foundation models and the key  innovations that led to the proliferation of transformer-based models. It will cover:

* How the theory and innovations of foundation models, including attention, decoders, and encoders, led to GPT-4
* How to leverage transfer learning techniques such as one-shot, few-shot learning, and knowledge distillation, to reduce the size of LLMs while retaining performance
* Where this domain is headed with current LLM research and developments

By the end of the program, learners will have built their own end-to-end production-ready LLM workflows.

Requirements: Windows 10 or Linux Ubuntu with PyCharm Community Edition IDE with JetBrains Academy plugin installed

python 3.10 with

Curriculum:

Class 1 Text Embedding

Class 2 Transformers

Class 3 Self Attention and Multihead self-attention

Class 4 Tokenization and Decoding

Class 5 Graph attension networks

Class 6 Generative adversarial networks

Class 7 Reinforcement learning

Class 8 Model fine-tuning

Class 9 Model quantizing

Class 10 Continuous pre-training