Large Language Models: From Transformers to ChatGPT

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Large language models (LLMs) have become a more popular and exciting theme in machine learning in the past few years with the advent of generative AI and frameworks like ChatGPT. Applications range from sentiment analysis to question answering to text summarization and more. LLMs are revolutionizing the way we interact with technology and our world, with Virtual Assistants being one example. In this course, we will begin with a recap of Deep learning and Natural language processing before moving into Large Language models and embeddings in first half of course. In the second half, we will build on top of LLM foundations and discuss generative AI applications, models, tools and techniques including touching on ChatGPT 3.5 and Dalle-2 APIs. Both parts of the course will involve weekly programming assignments and one mini project to showcase your learnings on your own analytics/AI webpage.

Prerequisite: Basics of Machine Learning through a previous course and working experience with Python Language

Tentative Content:

Part 1
***** Introduction to Deep Learning
* Introduction to Natural Language Processing
* Deep Learning for Embeddings
* Word2Vec, Glove and Sentence Embeddings
* Transformers - BERT and BART
* Applications to Semantic Search, Sentiment Analysis and question answering
* *Mini-project on Semantic Search*

Part 2
* Introduction to Generative AI
* Transformers and ChatGPT
* Working with ChatGPT API
* Prompt Engineering and Fine-Tuning
* Applications of ChatGPT to data augmentation, sentiment analysis and other generative tasks
* Cousins of ChatGPT: Dalle-2, MidJourney and BARD
* Peek into LLMs for production
* *Mini-project on Generative AI for NLP*