GPT 3.5 and Beyond: Evolution of Transformer-Based Language Models

Course ID #: 7000-858-ZZ-Z

Hours: 6-8

Course Content

Course Description:

Embark on a journey of Natural Language Processing (NLP) with this comprehensive course on GPT-3.5 and the future of transformer-based language models. Gain a deep understanding of the evolution of these groundbreaking models and how they are shaping the future of AI-driven text generation and understanding.

Prerequisites:

None.

Target Audience:

NLP Researchers and Practitioners, Data Scientists and Machine Learning Engineers, Product Managers and Technical Leads, AI Enthusiasts and Hobbyists, Business owners, Professionals in HR.

Topics:

Module 1: Natural Language Processing (NLP) and ChatGPT

Lesson 1: Introduction to NLP
- Definition of NLP and its role in machine learning and AI.
- Techniques like tokenization, lemmatization, and syntactic parsing.
- Challenges: Named Entity Recognition (NER), sentiment analysis, etc.

Lesson 2: Understanding ChatGPT
- Overview of recurrent neural networks (RNNs) and attention mechanisms.

- Architectural components: Embeddings, attention heads, etc.
- Training data selection and augmentation for NLP models.

Lesson 3: The GPT Architecture
- Detailed explanation of the Generative Pre-trained Transformer (GPT) model.
- Insights into the inner workings of the Transformer architecture.
- Advanced concepts like positional encoding and multi-head attention.

Module 2: Models and Fine-Tuning Techniques

Lesson 1: Advanced GPT Architectures
- Evolution of the GPT series (GPT-1, GPT-2, GPT-3).

- Comparison with other transformer-based models (e.g., BERT, XLNet).

Lesson 2: Fine-tuning and Transfer Learning
- Techniques for fine-tuning GPT models on custom tasks.
- Domain adaptation and transfer learning for specific applications.

Lesson 3: Large-scale Model Handling
- Strategies for training and deploying large-scale models.
- Handling memory constraints and distributed computing.

Lesson 2: Deployment Strategies
- Hosting options: Cloud platforms (AWS, GCP) and serverless architectures.
- Model versioning and rollback procedures.

Lesson 3: Model Interpretability and Debugging
- Techniques for understanding and visualizing model outputs.
- Debugging common issues in NLP models.

Module 3: Assessing and Deploying ChatGPT

Lesson 1: API Integration
- Setting up API endpoints for seamless interaction with ChatGPT.
- Utilizing API parameters for enhanced user experience.

Module 4: Advanced Topics and Ethics in NLP

Lesson 1: Cutting-edge NLP Techniques
- Recent advancements in NLP research (e.g., unsupervised learning, transformers beyond GPT).
- Applications in areas like dialog systems, summarization, and more.

Lesson 2: Ethical Considerations in NLP
- Addressing biases and fairness in language models.
- Responsible AI practices, explain ability, and model accountability.

Lesson 3: Accessing and Using ChatGPT
- Exploring ChatGPT interface to interact with it for tasks
- Communication with the model
- Ethical Use of ChatGPT
  - Understanding potential biases in language models
  - Responsible use and limitations of ChatGPT
  - Avoiding plagiarism, inaccurate information, biased responses

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