ChatGPT Curriculum

Detailed Schedule and Module Content Duration: 2 Months

Course Overview:

Brief Introduction:

· Purpose: To equip learners with the knowledge and skills to effectively implement and utilize ChatGPT in various real-world scenarios.

· Goal: By the end of this course, participants will be able to develop, deploy, and manage ChatGPT applications tailored to specific industry needs.

· Target Audience: Data scientists, software developers, product managers, and business analysts interested in leveraging ChatGPT for innovation.

· Prerequisites:

o Basic understanding of Python programming

o Fundamental knowledge of machine learning concepts

o Familiarity with natural language processing (NLP)

Module 1: Introduction to AI and Language Models

- **Topics:**
    - o History of AI (2 hours): Evolution, milestones.
    - o Basics of Machine Learning and Deep Learning (4 hours): Concepts, differences, applications.
    - o Introduction to Natural Language Processing (NLP) (4 hours): Key concepts, challenges, NLP pipeline.
    - o Overview of Language Models (4 hours): From rule-based to neural models, introduction to transformers.
- **Hands-On Activities:**
    - o Exploring different AI applications.
    - o Basic NLP tasks using Python (tokenization, stemming).
- **Quiz & Assessment:** Online quiz covering the basics of AI, ML, DL, and NLP.
- **Project:** Literature review on the evolution of language models.

Module 2: Deep Dive into Transformers and ChatGPT

- **Topics:**
    - Understanding Transformers (6 hours): Architecture, self-attention mechanism, BERT, GPT series.
    - Introduction to ChatGPT (4 hours): Architecture, training data, capabilities, limitations.
    - Working with OpenAI's API (4 hours): API setup, basic usage, best practices.
    - Fine-Tuning Language Models (6 hours): Principles, techniques, tools, and platforms.

- **Hands-On Activities:**
    - Implementing a simple transformer model.
    - Generating text with ChatGPT via OpenAI API.
    - Fine-tuning a small language model on a custom dataset.
- **Quiz & Assessment:** Online tests on transformers, ChatGPT, and fine-tuning concepts.
- **Project:** Develop a ChatGPT-based chatbot for a specific use case.

Module 3: Advanced Applications and Development

- **Topics:**
    - Integrating ChatGPT with Web and Mobile Applications (6 hours): Frameworks, examples, challenges.
    - Conversational AI and Chatbots (6 hours): Design principles, user experience, case studies.
    - Ethical Considerations and Bias in AI (4 hours): Ethical AI design, bias mitigation strategies.
    - Latest Advances and Research in NLP and Language Models (4 hours): Cutting-edge developments, future directions.
- **Hands-On Activities:**
    - Building a web application with ChatGPT integration.
    - Analyzing and mitigating bias in language model outputs.
- **Quiz & Assessment:** Case studies analysis, ethical dilemma discussions.
- **Project:** Group project to design and develop an innovative application using ChatGPT, considering ethical implications.

Module 4: Capstone Project

- **Topics:** Project planning, development, testing, and presentation.
- **Hands-On Activities:**
  - Capstone project execution: From idea to implementation, students will work in groups to create a comprehensive project utilizing the skills learned throughout the course. This may involve creating a novel ChatGPT application, enhancing existing models, or conducting research.
- **Assessment:**
  - **Project Presentation:** Each group presents their project to an audience, explaining the problem statement, solution approach, challenges faced, and lessons learned.
  - **Project Report:** A detailed report documenting the project's scope, design, implementation details, and user guide.