Generative AI for Digital Product Management for Enterprises
Course Outline

1) Foundations of Artificial Intelligence using Large Language Models (LLMs)

In this module, we delve into the foundations of Artificial Intelligence using Large Language Models (LLMs) such as ChatGPT. Key topics covered will include:

- Large Language Models: An introduction to LLMs and their significance in AI.
- LLM technology foundations: A deep dive into the underlying technologies that empower LLMs, including transformers.
- LLM options: A survey of various LLMs available in the market and their unique capabilities.
- Components of LLMs: An exploration of the building blocks constituting an LLM, such as attention mechanisms and tokenization.
- LLM architectures: A comprehensive overview of different LLM architectures and their strengths and weaknesses.
- The overall workflow of LLMs: A step-by-step guide to training, fine-tuning, and deploying LLMs in real-world applications.
- Multimodal approaches and GPT4 implications: An analysis of how multimodal approaches could shape the future of LLMs, particularly with advancements like GPT4.
- Prompt Engineering Tools: A showcase of tools and techniques available for practical, prompt engineering in LLMs.

We aim to provide a clear and informative guide to understanding the foundations of LLMs, equipping students with the knowledge and skills necessary to harness the power of these advanced AI models. By gaining a comprehensive understanding of LLMs, their architecture, and their applications, students will be well-prepared to design, develop, and optimize AI solutions to address a variety of challenges across various domains.

2) Prompt Engineering Tools:

In this module, we explore various tools and platforms that facilitate prompt engineering and enhance AI capabilities, including:

- OpenAI toolsets: A range of cutting-edge tools such as GPT3, GPT4, and Dall-E
- The OpenAI Code interpreter.
- Azure OpenAI services: AI solutions and services powered by Microsoft Azure and OpenAI collaboration
- Copilot and Copilot 365: Advanced AI-driven code completion and assistance tools
- AutoGPT: An AI tool for automated prompt engineering and optimization
- Text to Image AI: A collection of powerful tools that convert textual input into visual output and that can be effectively prompted via LLMs, featuring:

- Midjourney
- Playground AI
- Stable Diffusion (Automatic1111)
- Blockade Labs
- RunwayML
- Microsoft Designer

By familiarizing themselves with these prompt engineering tools, students will be well-equipped to harness the power of AI in various applications, from text generation to creative visualizations.

3) The Prompting Mindset:

In this crucial module, we delve into the core strategies of prompt engineering, emphasizing the importance of fostering a mindset that enables effective communication with AI systems and accurately predicts their thought processes to yield optimal responses. Key topics covered include:

- Cultivating a mindset for prompt engineering: Techniques and best practices for developing the mental framework necessary to excel in prompt engineering.
- Engaging with AI and anticipating its thought process: Strategies for interacting with AI models and foreseeing their cognitive patterns to optimize the responses generated through skillful prompt engineering.
- Experimentation and iteration in prompt engineering: Approaches for continuously testing and refining prompts to achieve improved performance, incorporating feedback loops and ongoing adjustments to ensure the highest quality outcomes.
- Ethical considerations in prompt engineering: Guidelines and principles for ensuring that AI models generate responsible, unbiased, and fair responses, addressing potential ethical challenges and promoting transparency in the AI development process.

By mastering the prompting mindset and honing these techniques, students will be well-prepared to engage with AI systems and achieve exceptional results across various applications. In addition, students will develop a strong foundation in prompt engineering and gain a deeper understanding of the iterative nature of the process and the importance of ethical considerations when working with AI systems.

4) Prompt Engineering Design and Workflow:

This module delves into the intricacies of designing and implementing AI applications from inception to completion. Key topics covered include:

- Identifying the starting point for application development: Pinpointing the initial steps and considerations for embarking on an AI project.

- Mapping out the entire workflow: Outlining the comprehensive development process and the stages of bringing an AI application to life.
- Training LLMs and the methods involved: Exploring various techniques and approaches for effectively training Large Language Models.
- The process of Prompting and techniques for Fine-Tuning: Examining the art of crafting prompts and refining AI models to achieve desired outcomes.
- Design thinking and systems thinking for generative AI.

We aim to provide a clear and informative guide, equipping students with the knowledge and skills necessary for practical application design and implementation across various AI projects.

5) Prompting Strategies:

In this module, we delve deeper into the nuances of prompt engineering, building upon the foundations established in previous modules. We explore various prompting strategies and their applications, including:

- Role Prompting: Techniques for guiding AI responses by assuming specific roles or perspectives.
- Persona-based Prompting: Strategies for generating responses tailored to distinct personas or character profiles.
- Few-shot Prompting: Approaches for leveraging limited examples to guide AI model behavior effectively.
- Combining Techniques: Methods for integrating multiple prompting strategies to achieve more refined and targeted results.
- Chain of Thought Prompting: Tactics for creating a series of interconnected prompts to maintain context and continuity.
- Zero-shot Prompting: Techniques for eliciting desired AI responses without providing explicit examples or guidance.

We aim to equip students with a comprehensive understanding of various prompting strategies, enabling students to effectively harness the power of AI models in generating creative and contextually relevant responses across diverse applications.

6) LLM Applications by for knowledge workers and digital creatives

<u>Knowledge workers</u>

- Knowledge-based tasks and digital proficiency
- Autonomy and decision-making
- Continuous learning
- Collaboration and communication
- Creativity and innovation
- Managing information

- Use of automation and productivity tools

In many cases, knowledge workers have acquired specific skills that are certified/validated. Examples of such knowledge workers include professionals in fields such as software development, research scientists, lawyers, doctors, educators, consultants, engineers, and financial analysts.

The term could be applied more generally to other professions like

- **Creators:** ex writers
- **People who engage with customers**: Customer Support Representatives, Virtual Assistants, receptionists, real estate, recruitment
- **Analysts:** Data Analysts, Legal and Medical Researchers, Market researchers, Social Media Managers
- **People who engage with Planning:** Travel Agents, Personal assistants, Claims adjusters for insurance

Knowledge workers can produce a range of **artifacts**, including Reports and Analyses; Presentations; Proposals and Business Plans; Prototypes and Designs; Models and Simulation; Intellectual Property; Training Materials; Strategies and Roadmaps; Data Visualizations; Case Studies; Best Practices Guides; Standard Operating Procedures (SOPs); Risk Assessments; Market Research Reports; Policy and Compliance Documents; Whitepapers; Data Models and Databases; Audit and Evaluation Reports; User Personas; Project Proposals; Strategic Roadmaps; Quality Assurance Documentation; Change Management Plans; competitive analysis; Regulatory Compliance Documents; risk management; Training Needs Assessments and manuals; Brand guidelines; Data dashboards.

Digital Creatives

Digital creatives encompass a variety of **job titles,** such as:

- **Designers:** Graphic Designers, Web Designers, UX /UI Designers, Interaction Designers, Front-End Developer
- **Audiovisual creatives:** animations (motion graphics designers), Digital Illustrators, Video editors, Visual Effects Artists, Game Designer
- **AR/VR professionals:** AR/VR Designer (Augmented Reality/Virtual Reality Designer): An AR/VR designer focuses on designing immersive and interactive experiences using augmented reality (AR) or virtual reality (VR) technologies.
- **Media, marketing, and advertising:** Creative directors, Social media managers, Brand Designers

Digital creatives produce a variety of **artifacts** such as Graphic Designs, Web Designs, Motion Graphics, Illustrations and Digital Art: Photography and Photo Editing, Video Editing, 3D Modeling and Animation, Social Media Content, Game Design, Audio and Sound Design, animated sequences, Storyboards, scene compositions, character designs.

Concept art, mood boards, VR environments, 3D assets, immersive experiences, scripts, dialogues, soundscapes, audio effects, music compositions

7) Challenges in Prompt Engineering and the Future of Prompt Engineering:

In this module, we delve into the various challenges and complexities that may arise in prompt engineering. We provide a comprehensive understanding of these challenges, including:

- Handling ambiguous or unclear prompts
- Mitigating biases in AI-generated responses
- Ensuring response accuracy and relevancy
- Addressing potential ethical concerns
- Dealing with prompt overfitting or underfitting

By exploring these challenges, we aim to equip students with the knowledge and strategies to effectively navigate potential obstacles and ensure robust AI prompt performance.

Finally, we delve into the fascinating possibilities that lie ahead in the rapidly evolving Field of prompt engineering. We explore various emerging trends and future developments, such as:

- Advances in AI models and architectures (AutoGPT)
- Multimodal AI Systems and their potential impact
- The Role of Ethics and Regulation in prompt engineering
- Integration of AI prompts in new application areas
- Continuous improvement in prompt engineering techniques

We aim to provide students with a glimpse of the future, inspiring students to stay ahead of the curve and adapt to the constantly changing landscape of prompt engineering.

This comprehensive course in prompt engineering with large language models is designed to empower participants with the essential knowledge and practical skills required to excel across various AI applications. Spanning diverse fields such as business, humanities, and social sciences, our curriculum aims to provide a solid foundation in prompt engineering techniques, LLM architectures, and AI-driven solutions.

By combining theoretical knowledge with hands-on experience, we aspire to cultivate a deep understanding of the intricacies and nuances of AI systems and their potential impact on various industries. In addition, our goal is to inspire and equip participants with the capabilities to harness the transformative power of AI, enabling them to drive innovation, enhance productivity, and address complex challenges facing the contemporary world.