MIT *xPRO*

DRIVING INNOVATION WITH GENERATIVE AI

WEEK 1 / GENERATIVE AI AND THE AI LANDSCAPE

A. History of AI
B. Generative AI Basics
C. What is a Generative AI model?
D. Types of Generative AI

WEEK 2 / VISUAL DATA AND IMAGE OUTPUTS

This week includes exercises using models and tools such as DALL-E, Midjourney, Leonardo, and Runway

A. Image Generative Models
B. How to train these models
C. What can these models be used for
D. Drawbacks of models

WEEK 3 / TEXTUAL DATA AND TEXT OUTPUTS

This week includes exercises using LLMs such as ChatGPT 4, Gemini, and Claude 3.5 Sonnet

A. Natural Language Processing (NLP)
B. Large Language Models (LLMs)
C. Using LLMS
D. Issues with LLMs

WEEK 4 / INNOVATIVE FRONTIERS: GENERATIVE AI ACROSS INDUSTRIES

A. Generative AI in Design
B. Generative AI in Coding
C. Generative AI in Molecular Sciences (Drug Discovery)
D. Generative AI in Additive Manufacturing

WEEK 5 / GENERATIVE AI FOR CREATIVITY EXPRESSION AND DESIGN OF COLLABORATIVE AGENTS

A. Gen AI in the Arts
B. Background and Future of Gen AI in the Arts
C. Human Experience and Gen AI Agents
D. Designing and Evaluating Companion AI Agents
E. Ethical Considerations of Companion AI Agents
F. Human-AI Interaction and Decision Making
G. The Dangers of Over-Reliance and Overcoming Biases

WEEK 6 / STRATEGY AND SOCIETAL IMPLICATIONS OF GENERATIVE AI (POLICY, ETHICS, AND HUMAN AUGMENTED WORK)

A. Human Complementarity and AI-Human Collaboration
B. Business Cases and Examples of AI-Human Collaboration
C. Aligning AI Systems with Developer and User Goals
D. Ethical Generative AI and Health