

Generative AI in practice

Module 1: Introduction to Generative AI

- What is Generative AI?
- History and evolution of generative models
- Applications: Text, Image, Audio, Video, Code generation
- Overview of models: GPT, DALL·E, Codex, Claude, Stable Diffusion, Gemini, Sora
- Ethics and responsible AI use

Module 2: Foundations of Generative Models

- Difference between Generative vs Discriminative models
- Key concepts:
- Latent space
- Sampling
- Conditioning

Overview of:

- GANs (Generative Adversarial Networks)
- VAEs (Variational Autoencoders)
- Transformers and Diffusion models

Module 3: Generative Text with LLMs

- Understanding Large Language Models (GPT, Claude, PaLM)
- Prompt engineering (zero-shot, few-shot, CoT)
- Text generation use cases:
- Email and blog writing
- Storytelling and screenwriting
- Summarization and translation
- Role-playing chatbots
- Tools: ChatGPT, Claude, Bard/Gemini, Cohere, HuggingFace

Module 4: Image Generation in Practice

- Intro to text-to-image models: DALL·E, Midjourney, Stable Diffusion
- Crafting prompts for creative visuals
- Advanced prompt engineering (style, mood, lighting)
- Remixing images (inpainting, outpainting)

Real-world use cases:

- Ad creatives
- Album covers
- Character and game design

Module 5: Generative AI for Code

- Using GitHub Copilot and ChatGPT for coding
- Autocomplete and code generation
- Explaining and debugging code with AI
- Writing documentation and test cases
- Building mini apps with AI assistance

Module 6: Generative Audio and Music

- Audio generation with tools like:
- Suno AI
- ElevenLabs
- Bark
- Text-to-speech and voice cloning
- AI Music generation (Melody, Lyrics)
- Use cases in podcasting, game audio, and voiceovers

Module 7: Generative Video & Animation

- Introduction to AI video tools (RunwayML, Pika Labs, Sora by OpenAI)
- Text-to-video generation basics
- Video editing with generative tools
- Creating explainer or product videos using AI

Module 8: Building GenAI Workflows & Apps

- Combining tools using:
- Zapier/Make
- LangChain & Flowise
- APIs (OpenAI, Stability AI, Replicate)
- Multi-modal workflows (text + image + audio)
- Example: AI-powered personal assistant

Module 9: Industry Use Cases

- Marketing: Content generation, ad design, social media posts
- Education: AI tutors, quiz & summary creators
- Healthcare: Symptom checkers, report generation
- Business: Meeting summaries, report automation, GenAI dashboards
- Entertainment: Script generation, meme generators

Module 10: Risks, Ethics & Governance

- AI hallucinations and misinformation
- Copyright & plagiarism issues
- Bias in generative models
- Data privacy and regulation
- Principles of responsible AI use

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