Latest industry AI tools

Module 1: Introduction to Modern AI Tooling

- Evolution of AI tools: from research labs to industry
- Categories of AI tools:
  - Model development
  - MLOps and deployment
  - Generative AI (text, image, video)
  - Agents and automation
  - Prompt engineering platforms
- Open-source vs commercial tools
- APIs vs SDKs vs UI-based tools

Module 2: Foundation Model APIs

- OpenAI (GPT-4o, DALL·E 3, Whisper)
- Anthropic (Claude 3 family)
- Google Gemini (Gemini 1.5 Pro, Flash)
- Meta LLaMA (Code LLaMA, LLaMA 3)
- Mistral & Mixtral
- Hugging Face Transformers Hub
- Cohere for command and embeddings
- Stability.ai (Stable Diffusion)

Module 3: Tooling for Prompt Engineering

- Prompt engineering fundamentals
- LangChain (for chaining LLMs & tools)
- LangGraph (for stateful workflows & agents)
- PromptLayer (for prompt tracking)
- OpenAI Assistants API
- FlowiseAI (no-code LLM workflows)
- Dust.tt / Guidance / Outlines (advanced prompting control)
- LlamaIndex (for knowledge-based prompting)

Module 4: Agent Frameworks & Autonomous AI

- LangChain Agents & Tools
- CrewAI (multi-agent orchestration)
- AutoGen by Microsoft
- OpenAgents
- ReAct, AutoGPT, BabyAGI — differences and use cases

- AI planning, memory, and state sharing between agents
- AgentOps (monitoring and lifecycle management)

Module 5: Data & Vector Databases

- Pinecone (proprietary vector DB)
- Weaviate (open-source)
- ChromaDB
- FAISS (Facebook AI Similarity Search)
- Milvus & Qdrant
- Using embeddings with OpenAI / Cohere / HuggingFace
- Building Retrieval-Augmented Generation (RAG) pipelines

Module 6: LLM Observability, Tracing & Experimentation

- LangSmith (LangChain's tracing & eval tool)
- Weights & Biases (LLM & model tracking)
- TruLens (LLM evaluation & feedback loops)
- Phoenix by Arize (open-source LLM observability)
- Eval tools: OpenAI evals, Ragas, Promptfoo
- Human-in-the-loop feedback collection

Module 7: AI Deployment & Serving

- LangServe (deploy LangChain as API)
- FastAPI/Flask for custom deployments
- Vercel/Render for frontend + backend hosting
- Dockerizing AI apps
- Hugging Face Inference Endpoints
- Replicate (model-as-a-service deployment)
- Modal, BentoML, Sagemaker, Vertex AI

Module 8: MLOps & Model Management

- MLflow (model tracking, registry)
- DVC (data versioning)
- Prefect / Airflow (pipeline orchestration)
- Vertex AI / Azure ML / Sagemaker (full-stack platforms)
- Model CI/CD with GitHub Actions
- Monitoring: WhyLabs, Evidently, Arize

Module 9: Generative AI for Media

- Image generation:
  - DALL·E 3, Midjourney, Stable Diffusion, Leonardo AI
- Video generation:
  - Sora (OpenAI), RunwayML, Pika Labs, Synthesia
- Audio/Voice:
  - ElevenLabs (voice cloning), MusicGen, Bark
- Image prompting techniques and fine-tuning
- Applications in design, marketing, games

Module 10: No-Code/Low-Code AI Tools

- FlowiseAI (visual LangChain builder)
- Zapier + AI integrations
- ChatGPT Code Interpreter / Advanced Data Analysis
- Notion AI / Canva Magic / Figma AI
- Airtable AI
- Bubble.io + OpenAI
- Peltarion, Akkio

Module 11: Ethics, Safety, and Compliance Tools

- Red-teaming LLMs
- Prompt injection prevention tools
- AI hallucination detection tools
- Fairness & bias testing platforms
- Data anonymization & masking tools
- AI auditing frameworks (OpenAI system cards, Model cards)

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