

# Roadmap to Become a GenAI Expert in 2025



## Master Python and ML Fundamentals

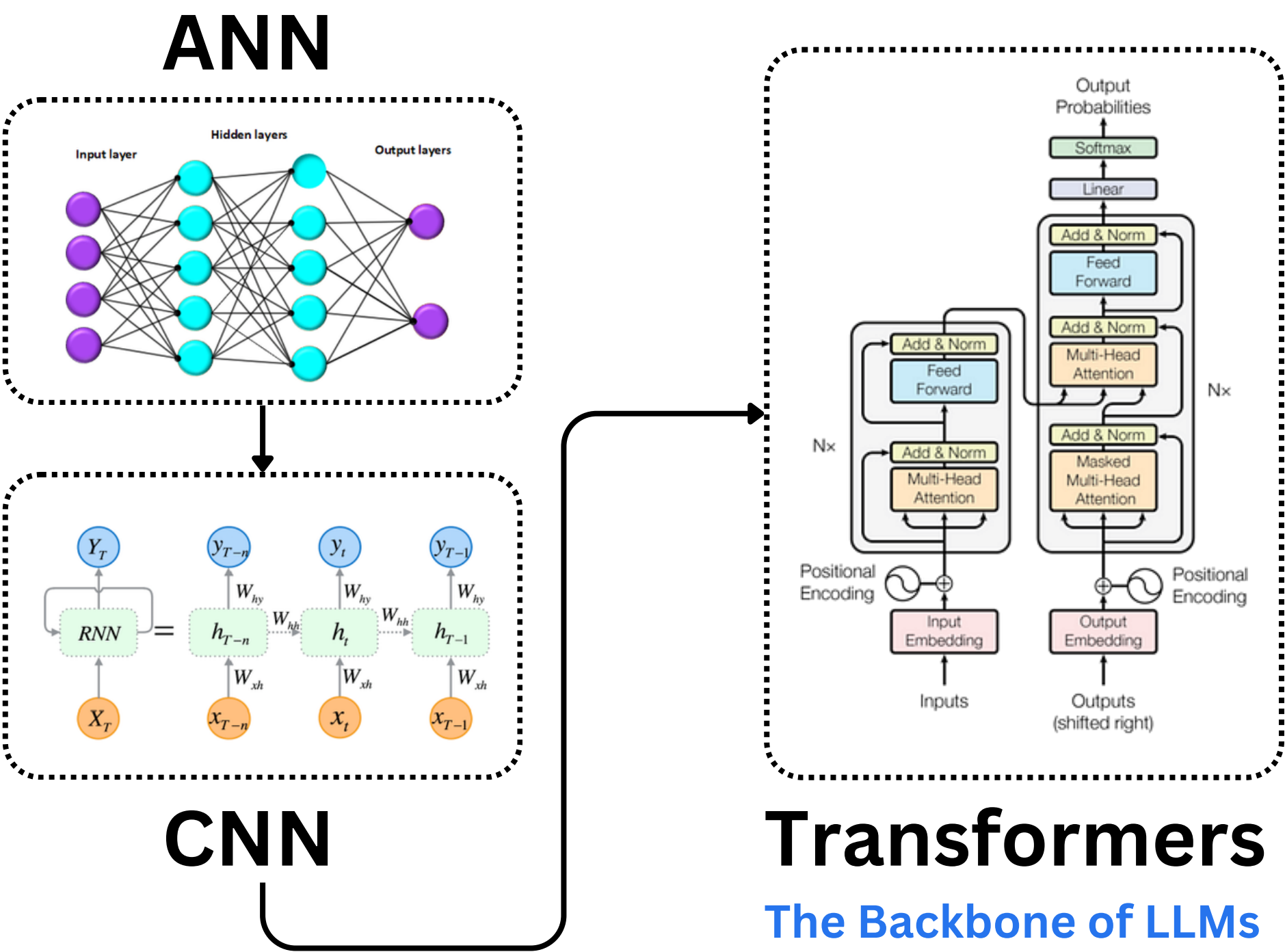
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- Learn Python data structures and libraries like **NumPy**, **Pandas**, **Matplotlib**.
- Understand key ML algorithms (**supervised** and **unsupervised**).

## Dive into Deep Learning

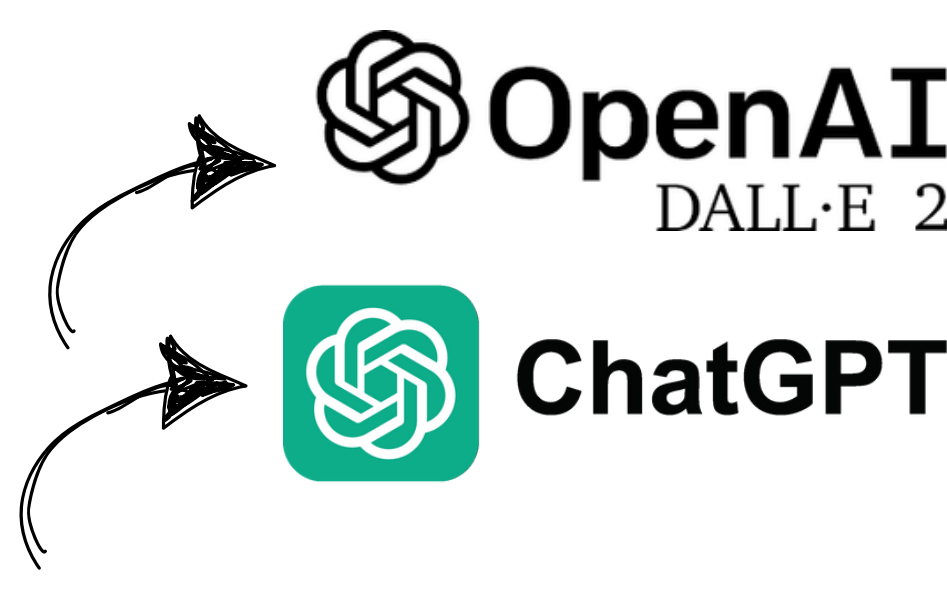
2

- Study Neural Architectures in this manner



- Use PyTorch for model building and **Hugging Face** for pre-trained models

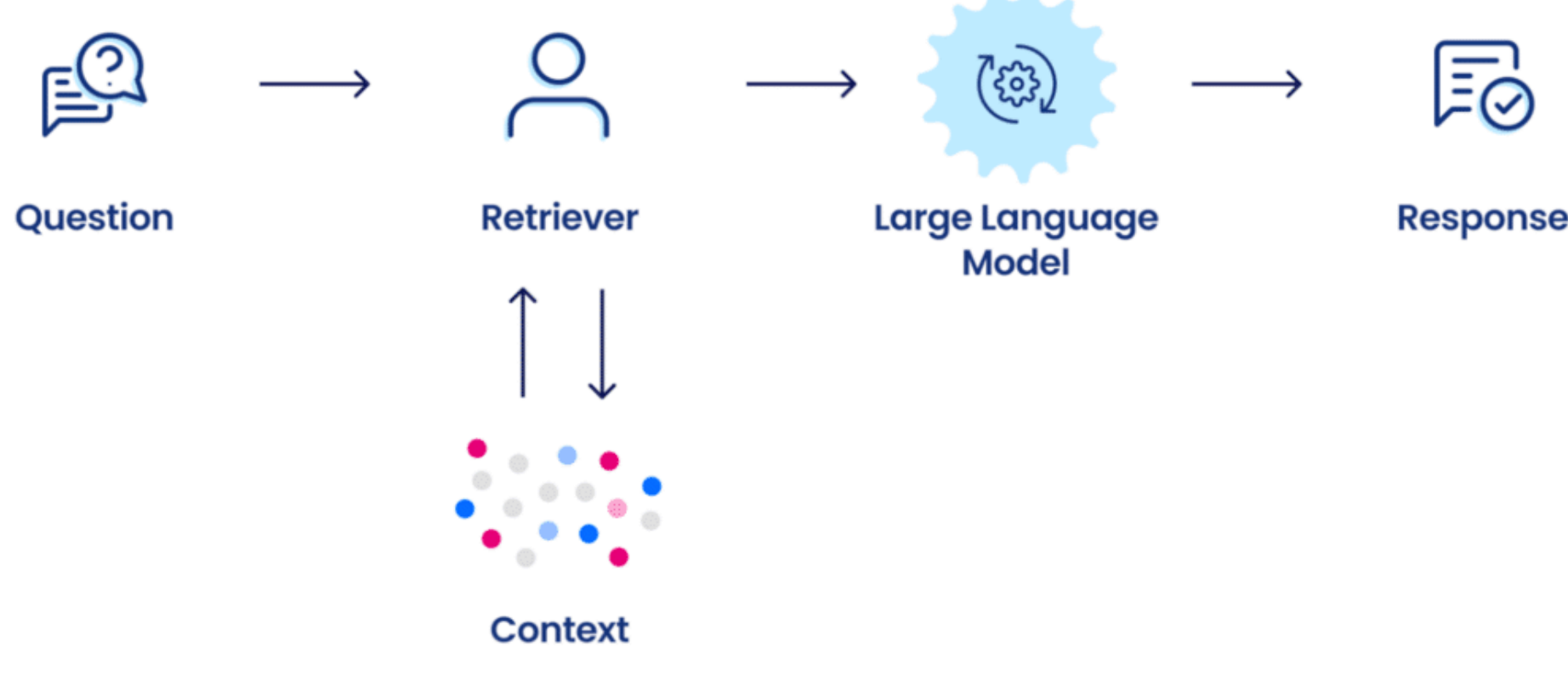
## Explore LLMs and Build Application with Prompt Engineering



3

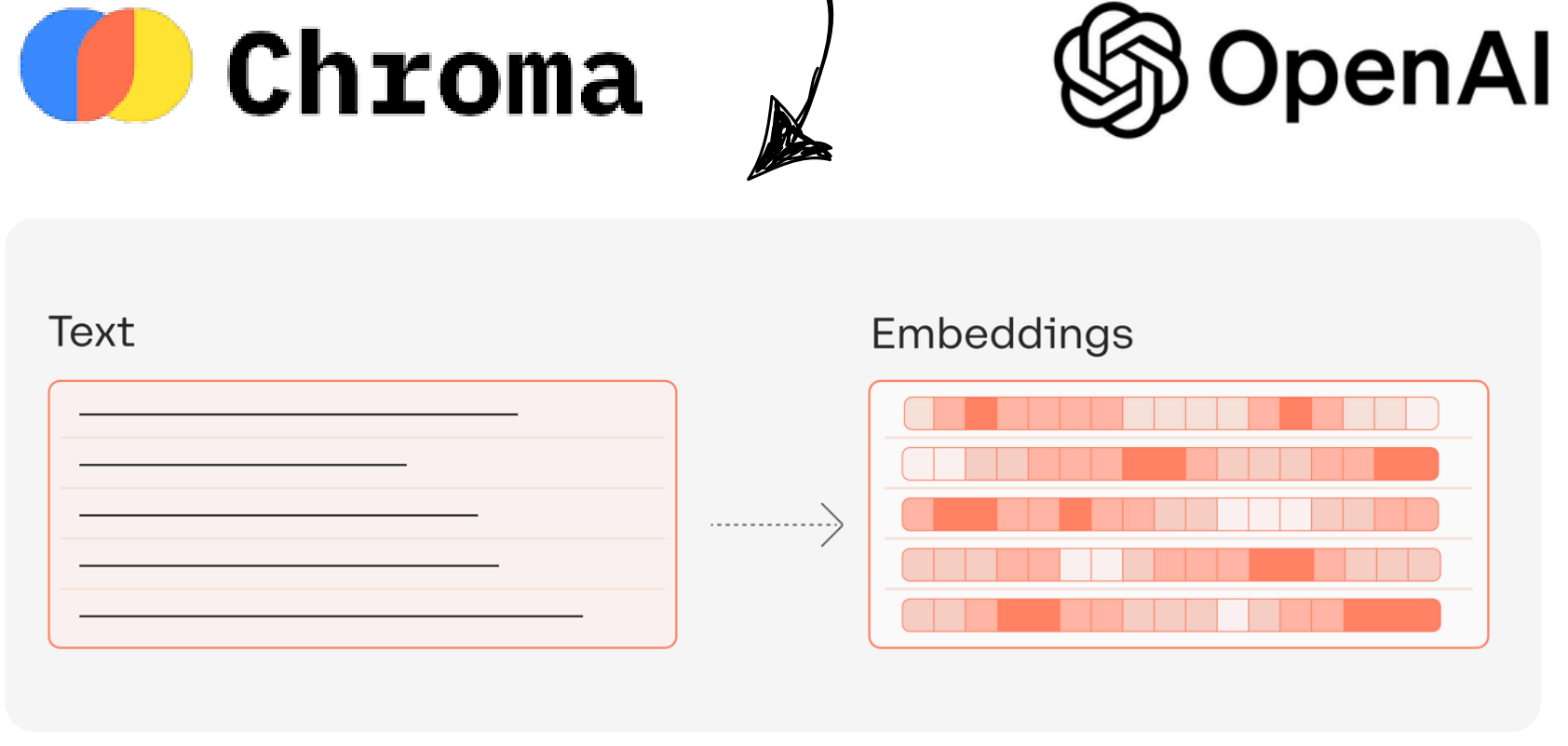
- Understand LLMs and experiment with tools like **ChatGPT** and **DALL-E**.
- Build applications with **APIs**, using Prompt Engineering for tasks like summarization and data extraction.
- Learn **LangChain** for scalable LLM workflows.

## Build RAG Systems

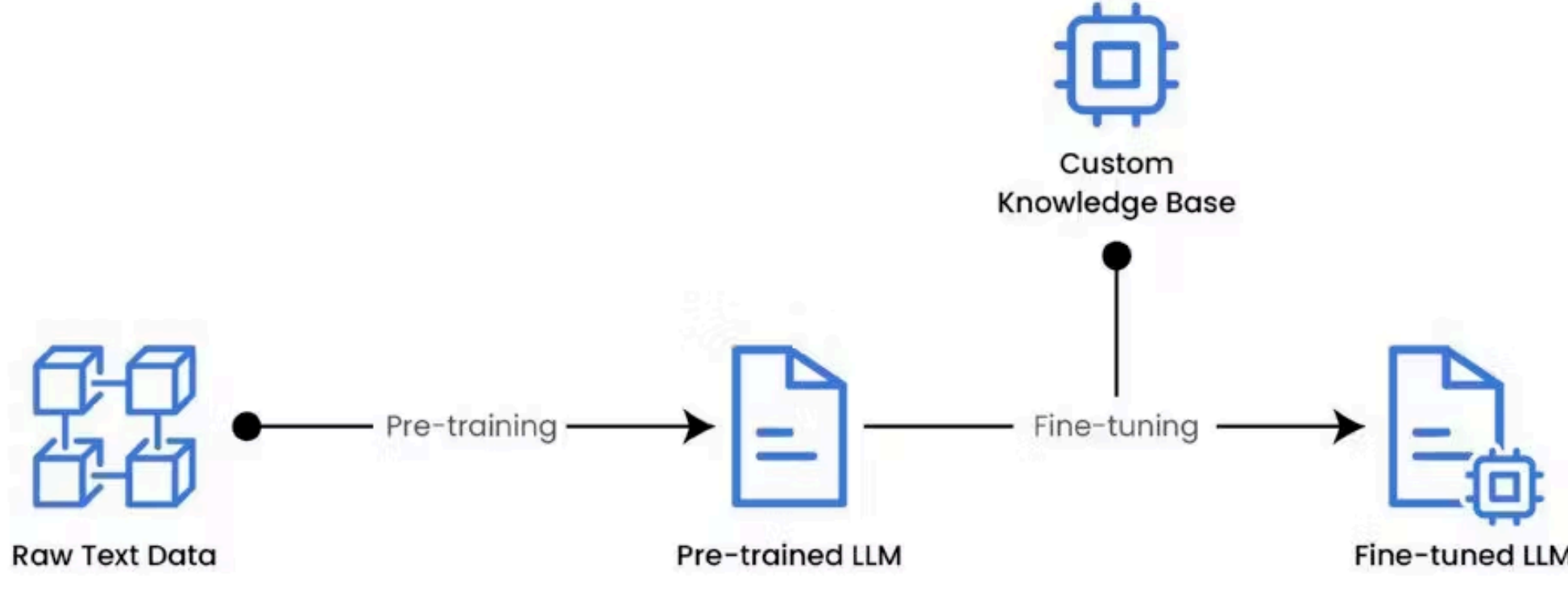


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- Integrate LLMs with domain-specific knowledge using **RAG systems**.
- Learn vector databases (**ChromaDB**, **Pinecone**) and embedding models (**OpenAI**, **Cohere**).



## Fine-Tune LLMs



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- Customize LLMs for domain-specific tasks like **finance** or **healthcare**.
- Use curated datasets and optimized **hyperparameters** for **precision**.



## Develop AI Agents

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- Understand frameworks like **Crew AI** and **AutoGen** for building autonomous systems.
- Combine reasoning, planning, and action with **LLMs** for complex workflows.



## Build a Portfolio and Stay Updated

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- Create real-world projects like AI pair programmers or data analysts.
- Share work on **GitHub**, **LinkedIn**, and **Kaggle**.
- Follow research papers, participate in hackathons, and take advanced courses.

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