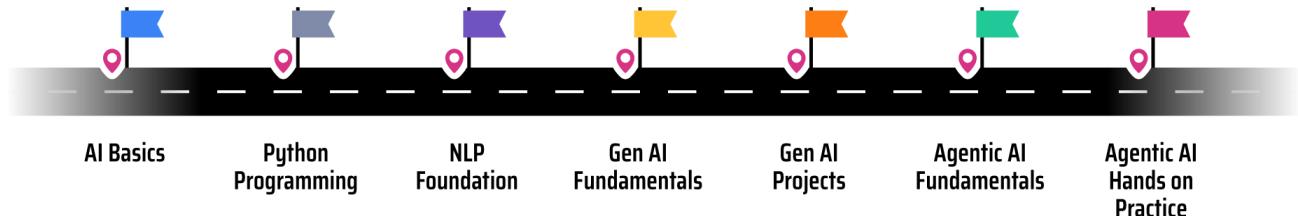


Agentic AI Roadmap

Following is the roadmap to learn Agentic AI skills. The prerequisite is basic computer science knowledge (i.e. what is bits, bytes, programming and algorithm basics)

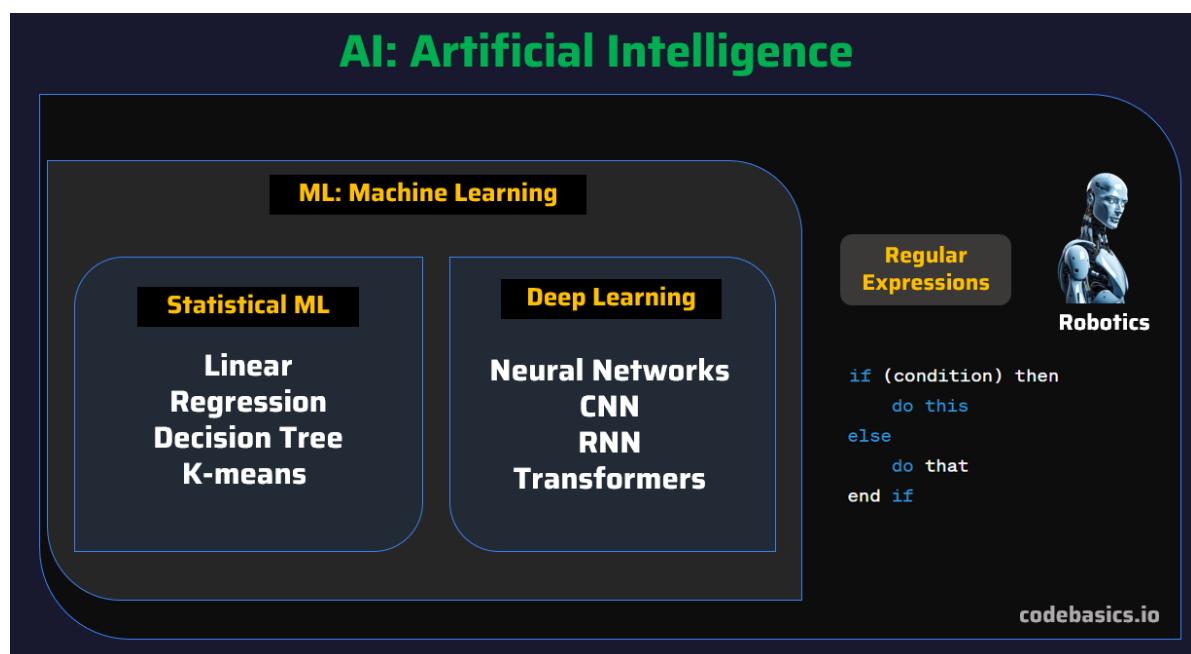


Step 1: AI Basics AB CD

As a first step, we need to have a clear understanding of various concepts and disciplines in the world of AI at a higher level. We need to understand AI family tree along with the following concepts,

- **Topics**

- Machine Learning vs AI
- Statistical vs Deep Learning
- Supervised vs Unsupervised Learning
- What is Gen AI, Agents, Agentic AI?
- NLP and rule-based system



- **Learning Resources**

- AI Basics YouTube video: <https://youtu.be/VGFpV3Qj4as>
- **EXTREMELY IMPORTANT:** Use ChatGPT 🤖 as your personal tutor in case you have doubts, and you need clarity on anything

Step 2: Python Programming

- **Topics**

- Variables, Numbers, Strings, Lists, Dictionaries, Sets, Tuples
- If condition, for loop, Functions, Lambda Functions
- Modules (pip install), Read, Write files
- Exception handling, Classes, Objects
- Inheritance, Generators, Iterators
- List Comprehensions, Decorators

- **Learning Resources**

- Track A (Free)
 - Python Tutorials (Codebasics) on YouTube - <https://bit.ly/3X6CCC7>
 - Corey's Python Tutorials: <https://bit.ly/3uqUgaZ>
 - Codebasics python HINDI tutorials - <https://bit.ly/3vmXrgw>
 - **EXTREMELY IMPORTANT:** Use ChatGPT 🤖 as your personal tutor in case you have questions or facing issues
- Track B (Affordable Fees)
 - AI Bootcamp: <https://codebasics.io/bootcamps/ai-data-science-bootcamp-with-virtual-internship>

Step 3: NLP Foundation

- **Topics**

- Regex
- Text preprocessing: Tokenization, stemming, lemmatization, NER, POS
- Text presentation: Count vectorizer, TF-IDF, BOW, Word2Vec, Embeddings
- Text classification: Naïve Bayes

- **Learning Resources**

- NLP YouTube playlist: <https://bit.ly/3XnjfEZ>

Step 4: Gen AI Fundamentals

- **Topics**
 - LLMs, Embeddings
 - Vector DBs (FAISS, Chromadb)
 - Retrieval Augmented Generation (RAG)
 - Langchain Framework
- **Learning Resources**
 - Track A
 - Gen AI free course on YouTube: <https://youtu.be/d4yCWBGFCEs>
 - Track B
 - Gen AI Bootcamp: <https://codebasics.io/bootcamps/ai-data-science-bootcamp-with-virtual-internship>

Step 5: Gen AI Projects

- Topics
 - Projects that include using LLMs, RAG, Agents to solve real life problems
- Learning Resources
 - Gen AI project playlist: <https://bit.ly/4ilzEnX>

Step 6: Agentic AI Fundamentals

- **Topics**
 - What is Agentic AI and how does it work?
 - Gen AI vs AI Agents vs Agentic AI
 - What is MCP?
- **Learning Resources**
 - What is Agentic AI? https://youtu.be/15_pppse4fY
 - Gen AI vs AI Agents vs Agentic AI: <https://youtu.be/O2gerCxEXvc>
 - What is MCP: <https://youtu.be/tzrwxLNHtRY>

Step 7: Agentic AI Hands on Practice

There are many different frameworks that you can use to build Agentic AI applications. You can learn 2 or 3 different frameworks out of these as they have different capabilities, and you can use one vs the other for a given situation

Frameworks: Agno, LangGraph, Crew AI, Google ADK, OpenAI ADK

- **Topics**

- Build agent using tools, knowledge and memory using lightweight framework Agno
- Building reliable stateful agents using LangGraph
- Tracing using LangSmith
- Build MCP server

- **Learning Resources**

- Track A (Free)
 - Build lightweight, fast agents with Agno: <https://youtu.be/EUey9L9sgzE>
 - LangGraph/LangSmith crash course: <https://youtu.be/CnXdddeZ4tQ>
 - Build your MCP server: <https://youtu.be/jLM6n4mdRuA>
 - Agentic AI Tutorial using LangGraph :
<https://www.youtube.com/watch?v=CnXdddeZ4tQ>
 - Crew AI: <https://www.youtube.com/watch?v=G42J2MSKyc8>
- Track B
 - Gen AI Bootcamp: <https://codebasics.io/bootcamps/ai-data-science-bootcamp-with-virtual-internship>

Bonus: ML and DL Foundations

- **Topics**

- Statistical ML
 - Linear, Logistic Regression
 - Decision trees, Random Forest
 - Clustering (K-Means)
 - Model fine tuning and evaluation

- Deep Learning
 - Neural networks, CNNs, RNNs
 - Activation functions, Loss, Optimizers
 - Chain rule, regularization
- **Learning Resources**
 - Track A
 - ML YouTube playlist (more than 2 million views): <https://bit.ly/3io5qqX>
 - In this watch video 1 to 16
 - Deep Learning playlist (tensorflow): <https://bit.ly/3vOZ3zV>
 - CampusX PyTorch playlist: <https://bit.ly/43yldbP>
 - CampusX 100 days of deep learning: <https://bit.ly/41ZrfkD>
 - Book on Deep Learning: <https://d2l.ai/>
 - Track B
 - Gen AI Bootcamp: <https://codebasics.io/bootcamps/ai-data-science-bootcamp-with-virtual-internship>

Next Steps... 😊😊😊

- More projects 🎨
- Online brand building through LinkedIn, Kaggle, Discord, and Opensource contribution 💬

Tips for effective learning 🔥

- **Spend less time in consuming information, more time in**
 - Digesting
 - Implementing
 - Sharing
- **Group Learning**
 - Use **partner-and-group-finder** channel on codebasics discord server for group study and hold each other accountable for the progress of your study plan. Here is the discord server link: <https://discord.gg/r42Kbuk>