

Python + AI + Core CS Concepts Roadmap

Phase 1: Python Foundation (Weeks 1-4)

- Variables, Data types, Operators
- Loops and Conditionals
- Functions and OOP
- Lists, Tuples, Dictionaries, Sets
- File and Exception Handling

Resources:

- CodeWithHarry Python Series (YouTube)
- Practice on HackerRank, Replit

Phase 2: Python + AI Basics (Weeks 5-8)

- Learn NumPy, Pandas, Matplotlib
- Understand AI basics: ML vs DL
- Supervised/Unsupervised Learning
- Build mini-projects: spam classifier, price predictor

Resources:

- Kaggle Datasets
- Scikit-learn documentation

Phase 3: Advanced AI + ML with Python (Weeks 9-14)

- Algorithms: Regression, Classification, Clustering
- Deep Learning with Keras and TensorFlow
- OpenCV for image tasks

Projects:

- Face Detection, Image Classifier, Chatbot

Phase 4: Real-World Projects & Integration (Weeks 15-20)

- AI Resume Analyzer, Voice Assistant
- Build REST APIs for AI Models

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- Connect AI with Flutter using APIs

Tools:

- Flask/Django, Firebase, GitHub, Postman

Phase 5: Core Computer Science Concepts (Parallel Learning)

Data Structures:

- Arrays, Stacks, Queues, Trees, Graphs
- Practice on LeetCode, GeeksForGeeks

Databases:

- Learn SQL (MySQL, SQLite), NoSQL (Firebase)
- Use SQLBolt.com for hands-on SQL

REST APIs:

- What/Why/How of APIs
- Use requests module in Python
- Practice with public APIs (e.g. OpenWeather, ChatGPT)

Career Tips & Resources

- Upload all projects to GitHub
- Create a portfolio website
- Freelancing: Fiverr, Upwork
- Jobs: LinkedIn, Rozee.pk, RemoteOK
- Join AI communities on Reddit, Discord

Daily Tools:

- ChatGPT, Notion AI, GitHub Copilot, Perplexity.ai