AI Engineer Roadmap

Phase 1: Foundation (1-2 Months)

1. Mathematics for AI

Key Topics: Linear algebra, calculus, probability, and statistics.

Courses:

- Mathematics for Machine Learning Specialization by Imperial College London.

- Probability and Statistics: To p or not to p? by the University of London.

Time Allocation: 2 hours/day, focus on understanding the concepts deeply.

2. Programming Skills

Key Language: Python is essential for AI.

Courses:

- Python for Everybody Specialization by the University of Michigan.

- Data Structures and Algorithms Specialization by UC San Diego.

Projects: Practice writing Python scripts, solve problems on LeetCode or HackerRank.

Phase 2: Core AI and Machine Learning (3-4 Months)

1. Introduction to AI and Machine Learning

Key Concepts: Supervised learning, unsupervised learning, reinforcement learning, neural networks.

Courses:

- AI For Everyone by Andrew Ng (Good starting point).

- Machine Learning by Andrew Ng (Stanford University).

- Deep Learning Specialization by Andrew Ng.

Projects: Implement algorithms from scratch, use libraries like TensorFlow or PyTorch.

2. Data Science and Data Engineering

Key Concepts: Data cleaning, data visualization, feature engineering, data pipelines.

Courses:

- Data Science Specialization by Johns Hopkins University.

- Data Engineering on Google Cloud (Helps understand large-scale data processing).

Projects: Work on real datasets, build data pipelines, and practice exploratory data analysis (EDA).

Phase 3: Advanced AI Topics (3-5 Months)

1. Specialized Areas

- Deep Learning: Advanced neural networks, convolutional neural networks (CNNs), recurrent neural networks (RNNs).

  Course: Deep Learning Specialization.

- Natural Language Processing (NLP): Language models, transformers, text classification.

  Course: Natural Language Processing Specialization by deeplearning.ai.

- Computer Vision: Image processing, object detection, facial recognition.

  Course: Advanced Computer Vision with TensorFlow.

2. Reinforcement Learning

Key Concepts: Markov decision processes, Q-learning, policy gradients.

Courses:

- Reinforcement Learning Specialization by the University of Alberta.

Projects: Build RL agents to play games or control systems.

Phase 4: Real-World Application and Projects (Ongoing)

1. Capstone Projects

Build and Deploy: Complete a series of capstone projects where you build and deploy AI models. Use tools like Docker, Kubernetes, and cloud platforms (AWS, GCP, Azure).

Portfolio: Create a portfolio with your projects on GitHub or a personal website.

2. Participate in Competitions

Platforms: Kaggle, DrivenData, or AI challenges on Coursera.

Goal: Solve real-world problems, gain exposure, and build a network.

3. Stay Updated and Continuous Learning

Follow AI Research: Read papers on arXiv, follow AI conferences (e.g., NeurIPS, ICML).

Advanced Courses: Consider diving deeper into areas like GANs, federated learning, or quantum machine learning.

Communities: Join AI communities on Reddit, Discord, or LinkedIn.

Phase 5: Specialization and Career Development (6-12 Months)

1. Job Preparation

Interviews: Practice coding interviews, system design, and AI problem-solving.

Resume: Tailor your resume to highlight your AI skills, projects, and any relevant experience.

2. Network and Collaborate

Connect with Experts: Attend webinars, workshops, and AI meetups.

Open Source: Contribute to open-source AI projects to gain more visibility.

3. AI Ethics and Fairness

Key Topics: Bias in AI, fairness, ethical AI design.

Courses:

- AI For Social Good by Google Cloud.

Final Advice

Consistency: Stick to your 2 hours/day schedule consistently.

Practical Experience: Focus on building real-world projects that solve meaningful problems.

Balance: Don't abandon blockchain; the dual expertise could make you highly valuable in areas like decentralized AI.