## Month 1: Introduction to ML and AI

- Understanding the fundamentals of machine learning and artificial intelligence
- Different types of machine learning (supervised, unsupervised, reinforcement learning)
- Overview of AI applications and use cases

## Month 2: Python Programming for ML and AI

- Basics of Python programming and libraries (NumPy, Pandas)
- Data manipulation and preprocessing using Python
- Introduction to Jupyter notebooks for interactive coding

## Month 3: Fundamentals of Machine Learning

- Supervised learning algorithms (linear regression, decision trees, k-nearest neighbors)
- Model evaluation and validation techniques
- Feature engineering and selection
- Introduction to cross-validation and bias-variance trade-off

## Month 4: Deep Learning and Neural Networks

- Introduction to neural networks and deep learning
- Building and training neural networks using libraries like TensorFlow or PyTorch
- Convolutional Neural Networks (CNNs) for image recognition
- Recurrent Neural Networks (RNNs) for sequence data

## Month 5: Unsupervised Learning and AI Techniques

- Clustering algorithms (k-means, hierarchical clustering)
- Dimensionality reduction (Principal Component Analysis, t-SNE)
- Natural Language Processing (NLP) basics and text processing
- Introduction to chatbots and sentiment analysis

**Month 6: Advanced AI Concepts**

- Reinforcement learning and Markov decision processes
- Transfer learning and fine-tuning pre-trained models
- AI ethics and responsible AI practices
- Capstone project: Developing an end-to-end ML or AI application

Throughout the program:

- Hands-on coding projects and assignments
- Weekly or bi-weekly quizzes to reinforce concepts
- Guest lectures from AI and ML professionals
- Peer reviews and collaboration on projects
- Encourage participants to explore specific areas of interest within ML and AI exploration and self-study beyond the curriculum.


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