

AI & ML Internship Curriculum (6 Months + Major Project)

Month 1: Programming & Math Foundations

Week 1–2: Python for AI/ML

- Python Basics
- Data Types & Control Structures
- Functions & Modules
- File Handling
- Virtual Environments

Week 3–4: Math for Machine Learning

- Linear Algebra Basics
- Statistics & Probability
- Mean, Median, Variance, Std Deviation
- Data Visualization Basics

Mini Task: Data Analysis using Python

Month 2: Data Analysis & Visualization

Week 5–6: Python Libraries

- NumPy
- Pandas
- Matplotlib
- Seaborn

Week 7–8: Data Preprocessing

- Data Cleaning
- Handling Missing Values
- Feature Scaling
- Encoding Techniques
- Exploratory Data Analysis (EDA)

Mini Project: Data Analysis & Visualization Project

Month 3: Machine Learning Fundamentals

Week 9–10: Supervised Learning

- Machine Learning Overview
- Linear Regression
- Logistic Regression
- KNN
- Decision Trees

Week 11–12: Unsupervised Learning

- Clustering (K-Means)
- Dimensionality Reduction (PCA)
- Model Evaluation Metrics

Mini Project: ML Prediction Model

Month 4: Advanced Machine Learning

Week 13–14: Ensemble Techniques

- Random Forest
- Gradient Boosting
- XGBoost Basics
- Hyperparameter Tuning

Week 15–16: Model Deployment Basics

- Train/Test Split
- Cross Validation
- Saving Models (Pickle/Joblib)
- Intro to ML Pipelines

Mini Project: End-to-End ML Pipeline

Month 5: Deep Learning & AI

Week 17–18: Deep Learning Basics

- Neural Networks
- Activation Functions
- Backpropagation
- TensorFlow / Keras Basics

Week 19–20: Advanced AI Topics

- Convolutional Neural Networks (CNN)
- Natural Language Processing (NLP)
- Computer Vision Basics

Mini Project: Image or Text Classification

Month 6: Major Project & Career Skills

Week 21–22: Major Project Development

Major Project Options:

- AI Chatbot
- Face Recognition System
- Recommendation System
- Spam Detection System
- Predictive Analytics Application

Features:

- Data Collection
- Model Training
- Evaluation
- Deployment (Basic)

Week 23–24: Career Preparation

- Git & GitHub
- Resume & Portfolio Building

- Interview Preparation
- Mock Interviews
- AI/ML Career Guidance

Tools & Technologies

- Python
- NumPy, Pandas
- Scikit-learn
- TensorFlow / Keras
- Jupyter Notebook
- Git & GitHub

Internship Deliverables

- Weekly Assignments
- Mini Projects
- Major Project
- Internship Certificate
- Project Documentation

Final Outcome

- Strong AI & ML Fundamentals
- Hands-on Project Experience
- Job-ready AI/ML Skillset
- Interview Confidence