

# AI / ML DEVELOPER – DAY-WISE INTERNSHIP PLAN (4 MONTHS)

**Duration:** 4 Months

**Working Days:** 5 days/week (Mon–Fri)

**Daily Time Split (Recommended):**

- 40% Learning
  - 50% Hands-on
  - 10% Review / Discussion
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## MONTH 1 – FOUNDATIONS (Days 1–20)

### WEEK 1 – Python, Tools & Engineering Basics

#### Day 1 – Orientation + AI Overview

- Company & internship overview
- What is AI, ML, DL, LLM
- Real-world use cases (Insurance, Finance, Chatbots)
- Roadmap explanation

#### Task

- Install Python, VS Code, Git
- Create GitHub account

#### Deliverable

✓ Internship repo created

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#### Day 2 – Python Basics

- Variables, data types
- Conditions & loops
- Functions

#### Task

- Write basic Python programs
  - Solve 10 coding problems
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## **Day 3 – Advanced Python**

- Lists, tuples, dicts, sets
- List/dict comprehensions
- Lambda functions

### **Task**

- Data manipulation exercises
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## **Day 4 – Python for ML**

- File handling
- Exception handling
- Virtual environments
- pip & requirements.txt

### **Task**

- Create virtual env
  - Install ML libraries
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## **Day 5 – Git & Linux Basics**

- Git workflow (clone, commit, push)
- Branching
- Linux commands

### **Task**

- Push Python scripts to GitHub
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# **WEEK 2 – Math, Stats & Data Handling**

## **Day 6 – NumPy**

- Arrays, indexing
- Matrix operations

### **Task**

- Numerical computation notebook

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## **Day 7 – Statistics**

- Mean, median, mode
- Variance, std deviation
- Normal distribution

### **Task**

- Stats calculations using Python
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## **Day 8 – Probability & ML Intuition**

- Probability basics
- Bias vs Variance
- Gradient Descent intuition

### **Task**

- Visualize gradient descent
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## **Day 9 – Pandas Basics**

- DataFrames
- Reading CSV/Excel
- Filtering, sorting

### **Task**

- Load & explore dataset
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## **Day 10 – Data Cleaning**

- Missing values
- Encoding categorical data
- Feature scaling

### **Task**

- Clean real dataset
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# WEEK 3 – EDA & Visualization

## Day 11 – Data Visualization

- Matplotlib
- Seaborn

### Task

- Create plots (hist, box, heatmap)
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## Day 12 – Exploratory Data Analysis

- Finding patterns
- Correlations
- Outliers

### Task

- EDA notebook
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## Day 13 – Feature Engineering

- Feature creation
- Feature selection

### Task

- Improve dataset features
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## Day 14 – Data Pipeline

- Data → Clean → Features → Model

### Task

- Build preprocessing pipeline
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## Day 15 – Review & Assessment

- Python test

- Pandas & EDA evaluation
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## **WEEK 4 – Intro to Machine Learning**

### **Day 16 – ML Basics**

- Supervised vs Unsupervised
  - Train/test split
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### **Day 17 – Linear Regression**

- Theory
- Implementation

#### **Task**

- Predict numeric value
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### **Day 18 – Logistic Regression**

- Classification
  - Accuracy, precision, recall
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### **Day 19 – Model Evaluation**

- Confusion matrix
  - ROC-AUC
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### **Day 20 – Mini ML Assignment**

✓ End-to-end simple ML model

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## **MONTH 2 – CORE MACHINE LEARNING (Days 21–40)**

## **WEEK 5 – Supervised Learning**

**Day 21 – Decision Trees**

**Day 22 – Random Forest**

**Day 23 – XGBoost (Intro)**

**Day 24 – Model Comparison**

**Day 25 – Assignment**

✓ Compare models on same dataset

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## **WEEK 6 – Unsupervised Learning**

**Day 26 – Clustering Basics**

**Day 27 – K-Means**

**Day 28 – Hierarchical Clustering**

**Day 29 – PCA**

**Day 30 – Mini Project**

✓ Customer segmentation

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## **WEEK 7 – Optimization & Tuning**

**Day 31 – Cross Validation**

**Day 32 – Hyperparameter Tuning**

**Day 33 – GridSearch / RandomSearch**

**Day 34 – Feature Importance**

**Day 35 – Optimization Assignment**

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## **WEEK 8 – ML PROJECT**

### **Day 36–39 – ML Mini Project**

- Problem definition
- Training
- Evaluation
- Report

### **Day 40 – Presentation & Review**

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## **MONTH 3 – DEEP LEARNING & LLMs (Days 41–60)**

### **WEEK 9 – Deep Learning**

#### **Day 41 – Neural Network Basics**

#### **Day 42 – Activation Functions**

#### **Day 43 – TensorFlow / PyTorch**

#### **Day 44 – Build NN**

#### **Day 45 – DL Assignment**

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### **WEEK 10 – Computer Vision**

#### **Day 46 – CNN Basics**

#### **Day 47 – Image Processing**

#### **Day 48 – Transfer Learning**

#### **Day 49 – Image Classifier**

#### **Day 50 – CV Mini Project**

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## **WEEK 11 – NLP**

**Day 51 – NLP Basics**

**Day 52 – Text Preprocessing**

**Day 53 – TF-IDF**

**Day 54 – Sentiment Analysis**

**Day 55 – NLP Assignment**

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## **WEEK 12 – LLMs & RAG**

**Day 56 – LLM Overview**

**Day 57 – Prompt Engineering**

**Day 58 – Embeddings & Vector DB**

**Day 59 – LangChain**

**Day 60 – Document Q&A Bot**

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## **MONTH 4 – DEPLOYMENT & CAPSTONE (Days 61–80)**

### **WEEK 13 – Deployment**

**Day 61 – Flask / FastAPI**

**Day 62 – REST APIs**

**Day 63 – Model Serialization**

**Day 64 – Docker**

**Day 65 – Deploy ML API**

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## **WEEK 14 – MLOps**

**Day 66 – ML Pipelines**

**Day 67 – MLflow**

**Day 68 – Model Versioning**

**Day 69 – Monitoring Basics**

**Day 70 – CI/CD Intro**

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## **WEEK 15 – FINAL PROJECT**

**Day 71–74 – Capstone Project**

- Data
  - ML/LLM model
  - API
  - Deployment
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## **WEEK 16 – REVIEW & CONVERSION**

**Day 75 – Code Review**

**Day 76 – Performance Review**

**Day 77 – Final Presentation**

**Day 78 – Feedback**

**Day 79 – Improvements**

**Day 80 – Internship Completion**

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## **FINAL OUTPUT FROM INTERN**

- ✓ 4–5 GitHub projects
- ✓ ML + LLM experience

- ✓ Deployment knowledge
- ✓ Industry-ready AI profile