TRAINING DOCUMENT – DATA SCIENCE & MACHINE LEARNING

3-Month Training Plan
(Focus: Real-World Projects + Career Preparation)

📅 **Timeline Overview**

Month	Sessions/Week	Focus
Month 1	3 sessions/week (12 total)	Project 1: AI-Powered Task Management System
Month 2	2 sessions/week (8 total)	Project 2: Personalized Recommendation System
Month 3	2 sessions/week (8 total)	Job Preparation & Mock Interviews

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Project 1 — AI-Powered Task Management System

Technologies: NLP, Automation, Time Series Forecasting

Week	Session	Topics
Week 1	S1	Introduction to the Project + Workflow of AI-based Systems
	S2	Data Gathering & Structuring (Task Logs, Time Stamps, Categories)
	S3	Data Preprocessing + Feature Engineering (Datetime, NLP Fields)
Week 2	S4	NLP Basics with spaCy/NLTK: Tokenization, POS, Lemmatization
	S5	Text Vectorization: Bag of Words, TF-IDF
	S6	ML Models for Task Categorization (Logistic Regression, Random Forest)
Week 3	S7	Time-Series Forecasting (Prophet, ARIMA Basics)
	S8	Smart Task Prediction System (Hybrid ML + Rules)
	S9	Evaluation Metrics (Accuracy, RMSE, Precision/Recall)
Week 4	S10	Flask App Creation + Integration with ML

Week	Session Topics	
	S11	Frontend Basics for Smart Task Dashboard
	S12	Mock Interview 1: Project-Based Technical Discussion

Project 2 — Personalized Recommendation System

Technologies: Collaborative Filtering, Content-Based Filtering

Week	Session Topics	
Week 1	S13	Introduction to Recommender Systems
	S14	Data Preparation: User-Item Matrix, Ratings Data
Week 2	S15	Content-Based Filtering (TF-IDF, Cosine Similarity)
	S16	Collaborative Filtering (KNN, SVD)
Week 3	S17	Building a Hybrid Recommendation Engine
	S18	Flask Integration: User Input + Model Prediction
Week 4	S19	Hosting Project on Render/Heroku
	S20	Final Demo & GitHub Portfolio Setup

Month 3: Job Preparation Sessions

Week	Session Topics	
Week 1	S21	Resume Building for Data Scientist / ML Engineer Roles
Week 2	S22	LinkedIn Profile Optimization for Data Science Careers
Week 3	S23	ML Interview Preparation (Coding + Conceptual Questions)
Week 4	S24	Final Mock Interview Simulation (Real Project + Theory)

🎯 **Final Deliverables for Participants**

- 2 Real-World ML Projects (Deployed & Documented)

- 1 Deployed Flask Web App with GitHub Code
- Resume + LinkedIn Profile Tailored for ML/DS Roles
- GitHub Portfolio with README Files
- 2 Mock Interview Experiences with Feedback
- Job Readiness in ML/DS Career Paths

🛠️ Tools & Tech Stack

Category	Tools
ML & NLP	Python, Scikit-learn, NLTK, spaCy, XGBoost
Recommenders	Surprise Library, SVD, Cosine Similarity
Time Series	Prophet, ARIMA
Deployment	Flask, Render, Heroku
DevOps	Git, GitHub
Productivity	Google Colab, Jupyter Notebook
Portfolio	GitHub, LinkedIn

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