

110 DAYS OF MACHINE LEARNING

Welcome to the 110 Days of Machine Learning Challenge! Now note that this challenge is supposed to be for 22 weeks. That's giving an allowance of 2 days weekly for rest and unwinding. Please try to observe the rest you need as you take on this challenge. All the best!

****Week 1-2: Python Programming, NumPy, and Pandas****

- ☐ - Day 1: Python Basics, Variables, and Data Types
- ☐ - Day 2: Control Flow and Loops in Python
- ☐ - Day 3: Functions and OOP in Python
- ☐ - Day 4: Introduction to NumPy and Pandas
- ☐ - Day 5: NumPy Array Manipulation and Operations
- ☐ - Day 6: Pandas DataFrames and Data Cleaning
- ☐ - Day 7: Data Visualization with Matplotlib
- ☐ - Day 8: Advanced Visualization with Seaborn
- ☐ - Day 9: Exploratory Data Analysis (EDA) with Pandas and Visualization
- ☐ - Day 10: Project: EDA on a Dataset

****Week 3-4: Scikit-learn and Model Evaluation****

- ☐ - Day 10: Introduction to Scikit-learn and Regression Models
- ☐ - Day 11: Classification Models in Scikit-learn
- ☐ - Day 12: Clustering and Dimensionality Reduction with Scikit-learn
- ☐ - Day 13: Model Evaluation and Cross-Validation
- ☐ - Day 14: Hyperparameter Tuning and Model Selection
- ☐ - Day 15-17: Project: Building a Supervised Learning Model
- ☐ - Day 18-20: Project: Unsupervised Learning and Clustering

****Week 5-6: Deep Learning Framework (TensorFlow or PyTorch)****

- ☐ - Day 21: Introduction to Deep Learning and the Chosen Framework
- ☐ - Day 22: Building Neural Networks in TensorFlow or PyTorch
- ☐ - Day 23: Training Neural Networks and Overfitting
- ☐ - Day 24: Transfer Learning and Pre-trained Models

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- ☐ - Day 25-27: Project: Image Classification using Deep Learning
- ☐ - Day 28-30: Project: NLP with Deep Learning (Text Classification or Language Generation)

****Week 7-9: Computer Vision and NLP****

- ☐ - Day 31: Image Preprocessing and Augmentation
- ☐ - Day 32: Object Detection and Image Segmentation
- ☐ - Day 33-34: Project: Object Detection Model
- ☐ - Day 34-35: Project: Image Segmentation Model
- ☐ - Day 35-36: Project: Integrating Computer Vision into Web App
- ☐ - Day 37: Text Preprocessing and Tokenization
- ☐ - Day 38: Text Classification and Sentiment Analysis
- ☐ - Day 39-41: Project: Building an NLP Model for Text Classification
- ☐ - Day 41-43: Project: Language Generation with GPT-like Model

****Week 9-10: Reinforcement Learning****

- ☐ - Day 44: Introduction to Reinforcement Learning
- ☐ - Day 45: Q-Learning and Deep Q Networks (DQNs)
- ☐ - Day 46: Policy Gradient Methods
- ☐ - Day 47-48: Project: Implementing a Reinforcement Learning Agent
- ☐ - Day 49-50: Project: Solving an RL Environment with OpenAI Gym

****Week 11: Geospatial Analysis****

- ☐ - Day 51: Introduction to Geospatial Data and GeoPandas
- ☐ - Day 52: Spatial Data Manipulation and Queries
- ☐ - Day 53: Project: Analyzing Geospatial Data for Locations
- ☐ - Day 54: Project: Geospatial Visualization on a Map
- ☐ - Day 55: Project: Integrating Geospatial Data into Web App

****Week 12: RESTful API and Model Deployment****

- ☐ - Day 56: Creating RESTful APIs with Flask or FastAPI
- ☐ - Day 57: Deploying ML Models with Docker
- ☐ - Day 58: Project: Building a Web API for ML Model Deployment

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- ☐ - Day 59: Project: Dockerizing the Web App
- ☐ - Day 60: Project: Deploying the Web App on a Cloud Platform

****Week 13-14: MLflow and Model Versioning****

- ☐ - Day 61: Introduction to MLflow and Experiment Tracking
- ☐ - Day 62: Managing Model Versions with MLflow
- ☐ - Day 63-64: Project: Tracking Experiments with MLflow
- ☐ - Day 65-66: Project: Managing Model Versions with MLflow
- ☐ - Day 67-70: Project: Building an MLflow Workflow for Model Development

****Week 15-16: MLOps and Continuous Integration (CI)****

- ☐ - Day 71: Introduction to MLOps and CI/CD for ML
- ☐ - Day 72-73: Setting Up CI/CD Pipelines for ML Models
- ☐ - Day 74-76: Project: Building a CI Pipeline for ML Models
- ☐ - Day 77-78: Project: Automating Model Deployment with CI/CD
- ☐ - Day 79-80: Project: Monitoring ML Models in Production

****Week 17: Docker, Kubernetes, and Cloud Platforms****

- ☐ - Day 81: Introduction to Docker and Containerization
- ☐ - Day 81-82: Building Docker Images for ML Applications
- ☐ - Day 82: Deploying Containers with Docker
- ☐ - Day 83: Introduction to Kubernetes and Orchestration
- ☐ - Day 83: Deploying ML Models with Kubernetes
- ☐ - Day 84: Introduction to Cloud Platforms (AWS, Google Cloud, Azure)
- ☐ - Day 85: Deploying ML Models on AWS
- ☐ - Day 85: Deploying ML Models on Google Cloud
- ☐ - Day 85: Deploying ML Models on Azure

****Week 18: Data Engineering****

- ☐ - Day 86: Introduction to Data Engineering and ETL Process
- ☐ - Day 86-87: Building Data Pipelines
- ☐ - Day 88-89: Data Processing with Apache Spark

- ☐ - Day 89-90: Data Storage and Retrieval with Cloud Databases

****Week 19: Model Interpretability and Explainability, Time Series Analysis****

- ☐ - Day 91: Interpreting ML Models' Decisions with Feature Importance
- ☐ - Day 92: Understanding LIME (Local Interpretable Model-Agnostic Explanations)
- ☐ - Day 93: SHAP (SHapley Additive exPlanations) for Model Interpretability
- ☐ - Day 94: Introduction to Time Series Analysis and Forecasting
- ☐ - Day 94: Time Series Data Preprocessing and Visualization
- ☐ - Day 95: Time Series Forecasting with ARIMA and SARIMA
- ☐ - Day 95: Time Series Forecasting with Prophet

****Week 20-21: GANs, Automated Machine Learning (AutoML), Bayesian Methods, Quantum Machine Learning (QML)****

- ☐ - Day 96: Introduction to GANs and Generative Models
- ☐ - Day 96-97: Building GANs for Image Generation
- ☐ - Day 98: Introduction to Automated Machine Learning (AutoML)
- ☐ - Day 98: Using Auto-sklearn for Automated Model Selection
- ☐ - Day 99: Introduction to Bayesian Methods and Probabilistic Modeling
- ☐ - Day 100-101: Hyperparameter Tuning with Bayesian Optimization
- ☐ - Day 102: Introduction to Quantum Computing and Quantum Machine Learning
- ☐ - Day 102: Quantum Algorithms for Machine Learning

****Week 21-22: Integration and Final Project****

- ☐ - Day 102-103: Integrate all components into a cohesive web app for relocation assistance.
- ☐ - Day 104-105: Work on improving the user interface, user experience, and recommendation engine.
- ☐ - Day 106-107: Gather feedback from users and make iterative improvements to the app.
- ☐ - Day 108-109: Deploy the web app on a cloud platform and ensure it can handle concurrent users.
- ☐ - Day 110: Finalize the web app, perform thorough testing, and prepare for public release.