**Learn ML and AI in 99 days challenge**

Thank you for joining in one of greatest timeline of AI and ML where the future depends upon them. You can learn core concepts of Machine learning And Artificial Intelligence by maintaining a continuous streak in your github. Upload every code and every documentation created by you in your github repository to show us your streak.

Good Luck!!

**Days 1-14: Foundations of Programming and Math**

* **Days 1-3**: Python Basics
  + Learn syntax, data structures, and libraries (NumPy, Pandas).
  + Project: Simple data analysis with Pandas.
* **Days 4-6**: Statistics and Probability
  + Understand distributions, mean, median, variance, and standard deviation.
  + Project: Analyze a dataset and summarize key statistics.
* **Days 7-10**: Linear Algebra
  + Focus on vectors, matrices, and operations.
  + Project: Implement basic linear algebra operations in Python.
* **Days 11-14**: Calculus Basics
  + Study derivatives and integrals relevant to optimization.
  + Project: Visualize functions and their derivatives.

**Days 15-28: Introduction to Machine Learning**

* **Days 15-17**: Machine Learning Overview
  + Learn about supervised vs. unsupervised learning, classification vs. regression.
* **Days 18-21**: Key Algorithms
  + Study linear regression, logistic regression, decision trees, and k-nearest neighbors.
  + Project: Implement and compare linear regression and logistic regression on a dataset.
* **Days 22-25**: Evaluation Metrics
  + Understand accuracy, precision, recall, F1-score, ROC/AUC.
  + Project: Create a confusion matrix and evaluate your models.
* **Days 26-28**: Data Preprocessing
  + Learn about handling missing data, normalization, and categorical encoding.
  + Project: Clean and preprocess a real dataset.

**Days 29-42: Intermediate Concepts**

* **Days 29-32**: Feature Engineering
  + Study techniques to select and create features.
  + Project: Engineer features from a dataset and assess their impact.
* **Days 33-36**: Ensemble Learning
  + Learn about bagging, boosting, and stacking.
  + Project: Implement a Random Forest model and compare it to a single decision tree.
* **Days 37-40**: Neural Networks Basics
  + Understand the architecture of neural networks.
  + Project: Build a simple neural network from scratch using NumPy.
* **Days 41-42**: Introduction to Deep Learning
  + Study deep learning frameworks (TensorFlow/PyTorch).
  + Project: Create a basic feedforward neural network using a framework.

**Days 43-56: Advanced Topics**

* **Days 43-46**: Convolutional Neural Networks (CNNs)
  + Learn about CNN architecture and applications in image processing.
  + Project: Build a CNN for image classification (e.g., MNIST).
* **Days 47-50**: Recurrent Neural Networks (RNNs)
  + Study RNNs and LSTMs for sequence data.
  + Project: Build an RNN for sentiment analysis on text data.
* **Days 51-54**: Model Tuning and Optimization
  + Explore hyperparameter tuning and cross-validation.
  + Project: Optimize a model using Grid Search or Random Search.
* **Days 55-56**: Transfer Learning
  + Understand the concept and applications of transfer learning.
  + Project: Use a pre-trained model for a specific task (e.g., image classification).

**Days 57-70: Practical Applications**

* **Days 57-60**: Natural Language Processing (NLP)
  + Learn techniques for text processing and analysis.
  + Project: Implement a text classification model (e.g., spam detection).
* **Days 61-64**: Reinforcement Learning Basics
  + Study key concepts and algorithms (e.g., Q-learning).
  + Project: Implement a simple reinforcement learning task.
* **Days 65-70**: End-to-End Project
  + Choose a dataset and build a complete ML pipeline: data collection, preprocessing, modeling, and evaluation.
  + Document your process and results.

**Days 71-84: Specialized Topics**

* **Days 71-74**: Unsupervised Learning
  + Explore clustering algorithms (K-means, hierarchical clustering).
  + Project: Implement clustering on a dataset and visualize results.
* **Days 75-78**: Time Series Analysis
  + Learn methods for analyzing time series data.
  + Project: Forecast future values using ARIMA or similar techniques.
* **Days 79-82**: Ethics in AI
  + Understand bias, fairness, and ethical considerations in ML.
  + Project: Analyze a dataset for potential biases.
* **Days 83-84**: Real-World Case Studies
  + Study successful ML applications across industries.
  + Project: Write a report on a case study and its impact.

**Days 85-99: Capstone Project and Review**

Create a project to show your excellence in the field. You must think of a project that becomes something new from the existing technology.

* **Days 85-90**: Capstone Project
  + Choose a comprehensive project that incorporates all learned skills.
  + Document your work and prepare for presentation.
* **Days 91-95**: Review and Consolidation
  + Revisit key concepts, algorithms, and projects.
  + Practice coding problems on platforms like Kaggle.
* **Days 96-99**: Presentation
  + Prepare to present your capstone project.
  + Engage with the ML community (forums, local meetups, or online groups).