#30DaysofML challenge

1. Structure of the challenge :
   - Each day, participants will receive a new topic or concept related to Machine Learning
   - Student should spend time researching & understanding the topic
   - Share your progress , ask questions & discuss their learnings within the whatsapp group
2. Content Breakdown (Day-Wise):

- **Day 1-5 : Introduction to Machine Learning**
  - **Day 1:** What is Machine Learning? (Beginner, Intermediate, Advanced)
  - **Day 2:** Types of Machine Learning (Supervised, Unsupervised, Reinforcement) (Beginner, Intermediate, Advanced)
  - **Day 3:** The Machine Learning Workflow (Data Acquisition, Preprocessing, Model Training, Evaluation, Deployment) (Beginner, Intermediate, Advanced)
  - **Day 4:** Real-World Applications of Machine Learning (Examples across various industries) (Beginner)
  - **Day 5:** Careers in Machine Learning and Challenges in ML (Intermediate, Advanced)
  - **Challenge:** Identify a real-world problem that can be solved using Machine Learning. (All Levels)

- **Day 6-10 : Data Preparation**
  - **Day 6:** Introduction to Data (Data Types, Understanding Data) (Beginner)
  - **Day 7:** Data Cleaning and Preprocessing Techniques (Missing Values, Outliers, Feature Scaling) (Beginner, Intermediate)
  - **Day 8:** Exploratory Data Analysis (EDA) (Visualizations, Understanding Data Distribution) (Intermediate)
  - **Day 9:** Feature Engineering (Creating New Features) (Intermediate, Advanced)
  - **Day 10:** Working with Imbalanced Datasets (Techniques for Handling Imbalance) (Advanced)
  - **Challenge:** Practice data cleaning and preprocessing with a sample dataset. (All Levels)

- **Day 11-20 : Machine Learning Models**
  - **Day 11-12-13:** Introduction to Linear Regression (Model, Assumptions, Applications) (Beginner)
  - **Day 14-15:** Logistic Regression (For Classification Problems) (Beginner, Intermediate)
  - **Day 16:** Decision Trees (Concepts, Advantages, Limitations) (Intermediate)
  - **Day 17:** Ensemble Methods (Random Forests, Gradient Boosting) (Intermediate, Advanced)
  - **Day 18:** Support Vector Machine (Types of kernels, application) (Intermediate)
  - **Day 19:** Naive Bayes (Theorem, Implementation)(Advanced)
  - **Day 20** :- PCA (Implementation, Fail Case) (Advanced)
  - **Challenge:** Implement a simple Linear Regression model on a sample dataset. (Beginner, Intermediate)

- **Day 21-25 : Model Evaluation and Deployment**
  - **Day 21:** Model Evaluation Metrics (Accuracy, Precision, Recall, F1-Score) (Beginner, Intermediate)
  - **Day 22:** Overfitting and Underfitting (Regularization Techniques) (Intermediate)
  - **Day 23:** Model Selection and Cross-Validation (Techniques for Choosing the Best Model) (Intermediate, Advanced)
  - **Day 24:** Model Deployment Strategies (APIs, Cloud Platforms) (Advanced)
  - **Day 25:** Machine Learning Ethics and Bias (Responsible AI Practices) (All Levels)
  - **Challenge:** Evaluate a pre-trained model on a new dataset and interpret the results. (Intermediate, Advanced)

- **Day 26-30 :**
  - **Deep Dives:** Dedicate these weeks to specific topics based on community interest (e.g., Natural Language Processing, Computer Vision, Deep Learning).
  - **Guest Speakers:** Invite industry professionals or experienced ML practitioners for guest talks or live Q&A sessions.