**Project Title: Iphone Purchase Prediction By Using Decision Tree**

**Project Duration:** 1 Days  
**Date Completed:** April 17, 2025  
**Author:** *sagar khese*

**1. project overview :**

Decision tree uses for to build classification model to predict whether a customer / user will purchase Iphone base on categorical feature like gender , ager and salary

**2. Dataset Overview**

* **Source file:** iphone\_purchase\_records.csv
* **Shape:** 400 rows × 4 columns
* **Features:** Gender, Age, Salary
* **Target Variable:** Purchase Iphone (0 = No, 1 = Yes)

**3. Solution Architecture**

**Raw data > data processing > Feature encoding (**Gender, Age, Salary) **> Model Training (DT) > Model Evaluation (accuracy score , distribution on feature ,correlation map) > Model saving**

**4. Methodology**

| **Step** | **Reason** |
| --- | --- |
| **Data Collection** | Loading csv file from local library |
| **Data Cleaning** | Checked for null values, selected relevant columns |
| **Exploratory Data Analysis (EDA)** | Visualized categorical feature distributions and correlation heatmaps , bar graph and pariplot |
| **Feature Engineering** | Selecting target independent and dependent columns |
| **Modeling** | Decision Tree |
| **Evaluation** | Accuracy score for training data |
| **Deployment Prep** | Saved the model using Joblib for future use |

**5. Time Taken**

| **Task** | **Time Spent** |
| --- | --- |
| Data Cleaning & EDA | 1 hour |
| Model Building | 15 minutes |
| Visualization | 30 minutes |
| Documentation | 1 hour |
| **Total Time** | **3 hours** |

**6. Challenges Faced**

* Size of dataset was small, making generalization little bit hard.
* Model overfitting due to evaluation on training set (solvable by train-test split).
* Ensuring reusability and reproducibility in visual output.

**7. Complexity**

* **Project Type:** Binary Classification
* **Complexity:** Low to Medium
* **Skills Required:** Python, Pandas, Seaborn, Scikit-learn, Data Visualization

**8. Recommendations**

* Collect more data for better generalization.