Task 1: Iris Flower Classification

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Problem Statement

The Iris flower dataset is one of the most famous datasets used for classification problems. The goal of this task is to build a Machine Learning model to classify iris flowers among three species (Setosa, Versicolor, Virginica) based on four features:

- Sepal Length

- Sepal Width

- Petal Length

- Petal Width

Dataset Description

The dataset consists of 150 rows and 5 main columns:

- SepalLengthCm

- SepalWidthCm

- PetalLengthCm

- PetalWidthCm

- Species (Target)

Libraries Used

- `python`
- `CopyEdit`
- `import pandas as pd`
- `import matplotlib.pyplot as plt`
- `import seaborn as sns`
- `from sklearn.model_selection import train_test_split`
- `from sklearn.linear_model import LogisticRegression`
- `from sklearn.metrics import accuracy_score, confusion_matrix,classification_report`

Exploratory Data Analysis (EDA)

We visualized the data using histograms, box plots, and pair plots to understand the relationship between features.

- Iris-Setosa is well-separated from the other two classes.

- Petal length and width are the most significant features.

Model Building

We used Logistic Regression from Scikit-learn to classify the flowers.

Steps:

1. Split the data into training and testing sets.

2. Train the logistic regression model on training data.

3. Predict on the test data.

Evaluation Metrics

- Accuracy Score: ~97%

- Confusion Matrix: Showed excellent classification

- Classification Report: High precision, recall, and F1-score

Conclusion

- The Logistic Regression model performed well in classifying the species of iris flowers.

- Petal measurements are strong indicators for classification.

- This project helped understand basic classification, data visualization, and model evaluation.

Files Included

- iris_task.py – The complete Python code

- Iris.csv – The dataset

- Task1_Report.docx or .pdf – This report file

GitHub Link

➢ **GitHub Repository for Task 1**