

# **Title: Iris Flower Species Classification**

## **Overview:**

This document explains the Iris Flower Species Classification project. It uses the K-Nearest Neighbors (KNN) algorithm to classify Iris flowers into different species based on the length of their petals and sepals. The code includes data loading, preprocessing, model training, evaluation, and visualization.

## **Code Explanation:**

The project consists of a Jupyter Notebook named "Iris\_Flower\_Classification.ipynb". Here's what it does:

- Data Loading: Loads the Iris dataset and converts it into a Pandas DataFrame.
- Data Preprocessing: Standardizes the features (sepal length, petal length) for consistent scaling.
- Model Training: Trains a KNN classifier with customizable neighbor count (`k`).
- Model Evaluation: Computes metrics like the confusion matrix, classification report, and overall accuracy.
- Data Visualization: Includes scatter plots to visualize data distribution and model predictions.

## **Operations:**

### **To use this code:**

1. Clone the repository to your local machine:
2. Navigate to the project directory:
3. Open the Jupyter Notebook file ``Iris_Flower_Classification.ipynb``.
4. Execute the notebook cells to load data, train the model, and visualize results.

### **Dataset Information:**

- Features: Sepal length, sepal width, petal length, petal width.
- Target Labels: Three Iris species - Setosa, Versicolor, Virginica.

The Iris dataset is commonly used for classification tasks and serves as an excellent resource for experimenting with machine learning algorithms.