Iris Flower Classification Using Machine Learning

1. Aim

To build a machine learning model that classifies Iris flower species using sepal and petal measurements.

2. Introduction

The Iris dataset contains 150 samples from three species: Iris-setosa, Iris-versicolor, and Iris-virginica.

Each flower is described using four features: sepal length, sepal width, petal length, and petal width.

The goal is to analyze the dataset and build a classifier to predict species.

3. Dataset Description

The dataset includes:

Sepal Length

Sepal Width

Petal Length

Petal Width

Species (target class)

4. Data Preprocessing

Steps performed:

Loaded the dataset

Cleaned species labels

Converted species names to numerical labels

Split data into training and testing sets

Applied Standard Scaler to normalize features

5. Model Training

A Random Forest Classifier with 100 trees was trained using the scaled training data.

6. Model Evaluation

Evaluation metrics included:

Accuracy Score

Classification Report

Confusion Matrix

The model achieved high accuracy, demonstrating strong performance.

7. Prediction

The model was used to predict the species of new Iris flower samples.

8. Conclusion

The machine learning model successfully classifies Iris flower species using supervised learning.

Random Forest provided excellent accuracy, making it a reliable classifier for this dataset.