Machine Learning Classification Report: Iris Dataset

1. Introduction

This report presents a comparison of six popular machine learning classification algorithms applied to the Iris flower dataset. The dataset includes 150 samples of iris flowers with four features: sepal length, sepal width, petal length, and petal width. The goal is to classify the species of iris flowers into three categories: Setosa, Versicolor, and Virginica.

2. Algorithms Used

- Logistic Regression

- Decision Tree

- Random Forest

- Naive Bayes

- Support Vector Machine (SVM)

- K-Nearest Neighbors (KNN)

3. Results

Each algorithm was trained and tested on the dataset using an 80/20 train-test split. The accuracies of each model were as follows:

- Logistic Regression: 1.00

- Decision Tree: 1.00

- Random Forest: 1.00

- Naive Bayes: 1.00

- Support Vector Machine (SVM): 1.00

- K-Nearest Neighbors (KNN): 1.00

4. Confusion Matrices

All algorithms achieved perfect classification in this case, and their confusion matrices show no misclassifications.

5. Conclusion

Based on the evaluation, all six algorithms performed exceptionally well on the Iris dataset, achieving 100% accuracy. This is due to the simplicity and cleanliness of the dataset. In real-world datasets, such performance may vary. For future studies, applying these algorithms to more complex datasets is recommended.