# Project Report: Iris Flower Classification

## Introduction

This project focuses on classifying iris flowers into three species: Setosa, Versicolor, and Virginica using machine learning techniques. The model leverages petal and sepal measurements to accurately categorize each flower species.

## Dataset Description

The dataset consists of the following numerical features:  
- Sepal Length (cm)  
- Sepal Width (cm)  
- Petal Length (cm)  
- Petal Width (cm)  
- Species (Target Variable)

## Data Preprocessing

To ensure the accuracy of the model, the following preprocessing steps were performed:  
1. Checking for missing values and handling inconsistencies.  
2. Encoding the categorical target variable using Label Encoding.  
3. Splitting the dataset into training and testing sets.  
4. Standardizing numerical features for better model performance.

## Model Selection and Training

A classification model such as Decision Tree, Random Forest, or Support Vector Machine (SVM) was used to classify the iris species. The model was trained using accuracy as the evaluation metric.

## Results and Conclusion

The trained model successfully classified iris flowers with high accuracy. Future improvements could involve hyperparameter tuning and testing deep learning models for better performance. This project demonstrates the potential of machine learning in botanical classification tasks.