Model and Metrices

In this project, we experimented with three different models and various hyperparameters to select the best model for the given dataset. The dataset we used here is the Iris flower dataset.

Models and Hyperparameters

We created models using Decision Tree, K-Nearest Neighbors (KNN), and Support Vector Machine (SVM), with the following hyperparameters:

Decision Tree:

max_depth: [2, 3, 4, 5, 6, 7, 8, 9, 10]

min_samples_split: [2, 3, 4, 5, 6, 7, 8, 9, 10]

KNN:

n_neighbors: [1, 3, 5, 7, 9, 11, 13, 15, 17, 19]

weights: ['uniform', 'distance']

SVM:

C: [0.1, 1, 10, 100]

kernel: ['linear', 'poly', 'rbf', 'sigmoid']

Hyperparameter Tuning

To determine the best hyperparameters for each model, we used the GridSearchCV library.

Results

Since the Iris flower dataset is relatively small, the accuracy we obtained for all three models was similar. However, the best model with the best hyperparameters was found to be the Decision Tree with max_depth of 3 and min_samples_split of 2, with an accuracy of 93%.