Building a SVM Model for Iris Flower Bracket

Github link : https://github.com/AbdelGJL/iris

Introduction :

In this report, we will be erecting a SVM model to classify Iris flowers into their separate species using the Iris dataset. We'll use scikit- learn library to make the model and estimate its performance.

Algorithm :

We used Support Vector Machines(SVMs), a popular machine learning algorithm that can be used for bracket, retrogression, and outlier discovery. SVMs work by chancing a hyperplane that stylishly separates the data points into their separate classes. The hyperplane is chosen in such a way that the distance between the hyperplane and the closest data points of each class(called the periphery) is maximized.

We start by importing the necessary libraries similar to pandas, numpy, seaborn, scikit- learn, joblib, and fix. We also load the Iris dataset from a CSV train into a pandas dataframe.

Next, we resolve the data into training and testing sets using thetrain_test_split function from scikit- learn. We also train a SVM model using the dereliction hyperparameters and estimate its performance using the delicacy score.

To ameliorate the model performance, we use GridSearchCV from scikit- learn to perform hyperparameter tuning. We specify a range of hyperparameters for the SVM model and usecross-validation to find the stylish combination of hyperparameters that gives the loftiest delicacy score.

After hyperparameter tuning, we estimate the performance of the SVM model using theclassification_report,confusion_matrix, andaccuracy_score functions from scikit- learn. We also save the stylish SVM model using joblib and fix it for after use.

Graphs :

We produce colorful graphs to fantasize the data and the performance of the SVM model. We use seaborn library to produce a pairplot and violinplot to fantasize the connections between the features and the distribution of the target variable. We also produce a confusion matrix and a bracket report to show the performance of the model.

Conclusion :

In this report, we've demonstrated how to make a SVM model for an Iris flower bracket using the scikit-learn library. We showed how to use hyperparameter tuning to ameliorate the model performance and how to estimate the performance of the model using colorful criteria . We also created colorful graphs to fantasize the data and the performance of the SVM model. The SVM model achieved high delicacy on the Iris dataset, which indicates that SVM is an important algorithm for bracket tasks.