Lab Exercises 21

Date: 18 Nov 2025

Implementation of Random Forest Classifier

from sklearn.ensemble import RandomForestClassifier

21. Implement Random Forest Classification on the Titanic Dataset to predict whether a passenger survived the Titanic disaster.

Performance Evaluation: Answer the following six evaluation questions based on your model results:

1. What is the overall accuracy of the Random Forest model on the test data?

2. Print the classification report. Which class has the highest precision and recall?

3. Construct the confusion matrix and report how many passengers were correctly and incorrectly classified?

4. Plot the feature importance graph and report which features contribute most to predicting survival?

5. Compare the performance of the model for different values of n_estimators (e.g., 50, 100, 200). Which value gives the best accuracy?

6. Evaluate the model using ROC-AUC Score. What is the AUC, and what does it indicate about model performance?