Model Summary

1.K-Nearest Neighbors (KNN)

Has accuracy of 0.77

The model has moderate accuracy, with a precision of 1.00 and F1-score of 0.71 for the False class, and precision of 0.69 and F1-score of 0.81 for the True class. Lower recall for False class but high recall for the True class.

2.Multi-Layer Perceptron (MLP)

Has accuracy of 0.91

The model has strong balance across precision and recall, with precision of 1.00 and F1-score of 0.90 for the False class, and precision of 0.85 and F1-score of 0.92 for the True class.

3.Decision Tree

Has accuracy of 0.64

The model has lower precision and recall for the False class with precision of 0.80 and F1-score of 0.50 for False, and precision of 0.59 and F1-score of 0.71 for the True class, indicating potential issues with class balance.

4.AdaBoost Classifier

Has an accuracy of 0.95

This is a best-performing model, with precision of 1.00 and F1-score of 0.95 for both classes. High precision and recall for both classes, resulting in an F1-score of 0.96 for the False class and 0.95 for the True class.

5.Gaussian Naive Bayes

Has accuracy of 0.95

The model has high performance with precision of 0.92 and F1-score of 0.96 for the False class, and precision of 1.00 and F1-score of 0.95 for the True class, showing effective classification across both classes.

6.Support Vector Machine (SVM) - Linear Kernel

Has accuracy of 0.86

Lower than other SVM models, with precision of 1.00 and F1-score of 0.84 for the False class, and precision of 0.79 and F1-score of 0.88 for the True class, showing less balance in precision and recall compared to other kernels.

Support Vector Machine (SVM) - RBF and Sigmoid Kernels

The model has accuracy of 0.91 for both kernels

The model has high recall and balanced precision for both classes, with precision of 1.00 and F1-score of 0.90 for the False class, and precision of 0.85 and F1-score of 0.92 for the True class.

Model selection

AdaBoost Classifier is suitable for its high accuracy while Gaussian Naive Bayes can alternatively be preferred for this task, as both achieve the highest accuracy of 0.95 and demonstrate a strong balance across precision, recall, and F1-scores.

While the SVM models with RBF and Sigmoid kernels have high accuracy of 0.91, their F1-scores are slightly lower than those of AdaBoost and Gaussian Naive Bayes.