**Decision Tree Results Summary**

• High average accuracy (~98.98%)

• Average precision (~99.24%)

• Average recall (~99.19%)

**Logistic Regression Results Summary**

• High average accuracy (~98.90%)

• High precision (~99.24%)

• High recall (~99.21%)

**K-Nearest Neighbour’s (KNN) Results Summary**

• High average accuracy (~98.94%)

• High precision (~99.31%)

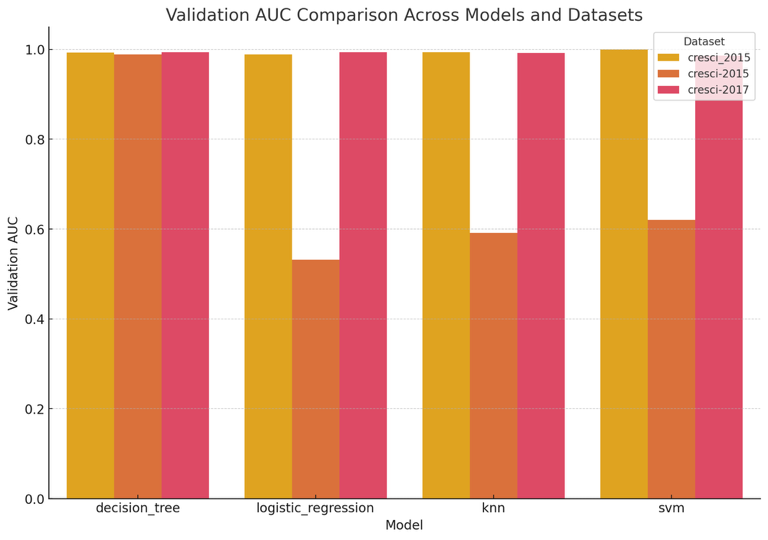
• High recall (~99.10%)

**Support Vector Machine (SVM) Results Summary**

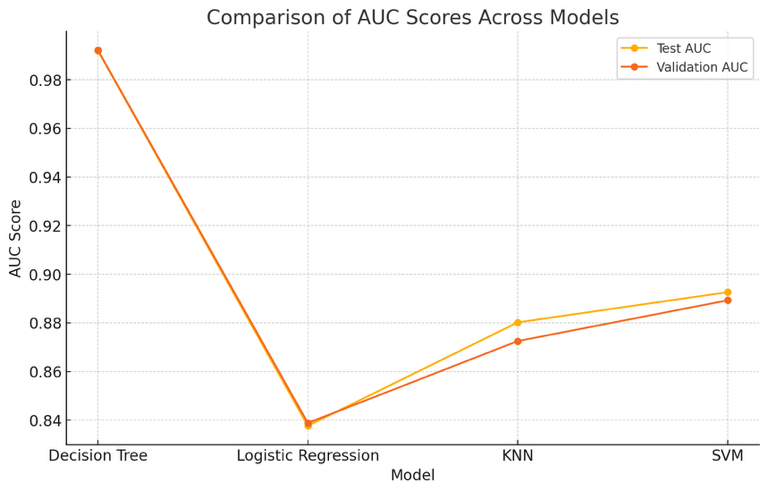
• High average accuracy (~98.81%)

• High precision (~99.23%)

• High recall (~99.16%)



Comparing the validation AUC across different models and datasets. This visualization helps find which models perform best for specific datasets.

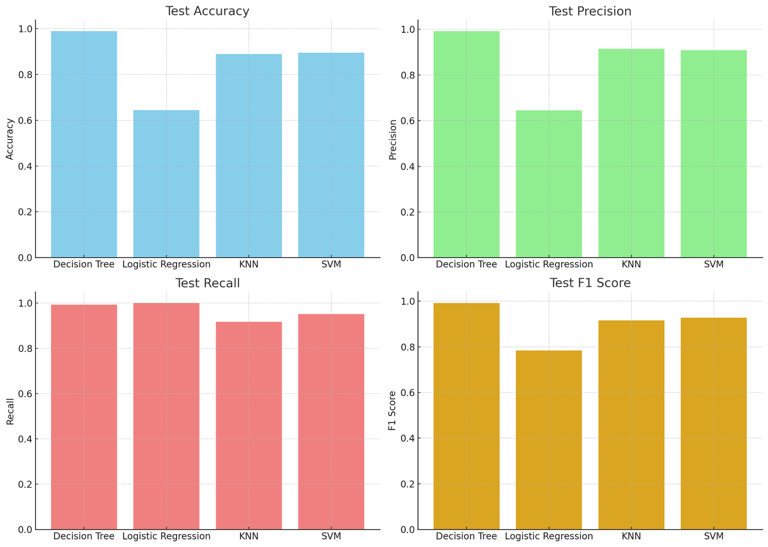
**Comparison of the test and validation AUC scores across the different models:**

\*\*Decision Tree\*\*

\*\*Logistic Regression\*\*

\*\*K-Nearest neighbours (KNN)\*\*

\*\*Support Vector Machine (SVM)\*\*

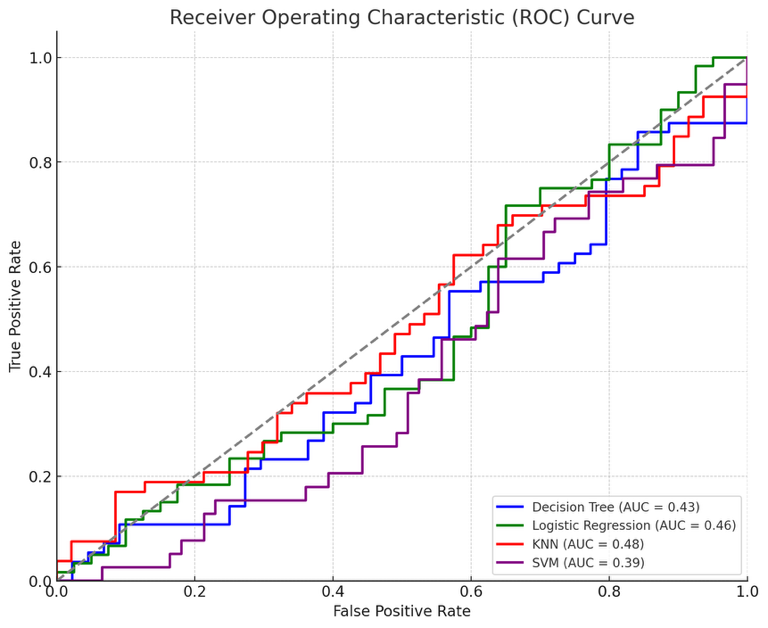
 Visualizations for the confusion matrix metrics across different models:

1. Test Accuracy

2. Test Precision

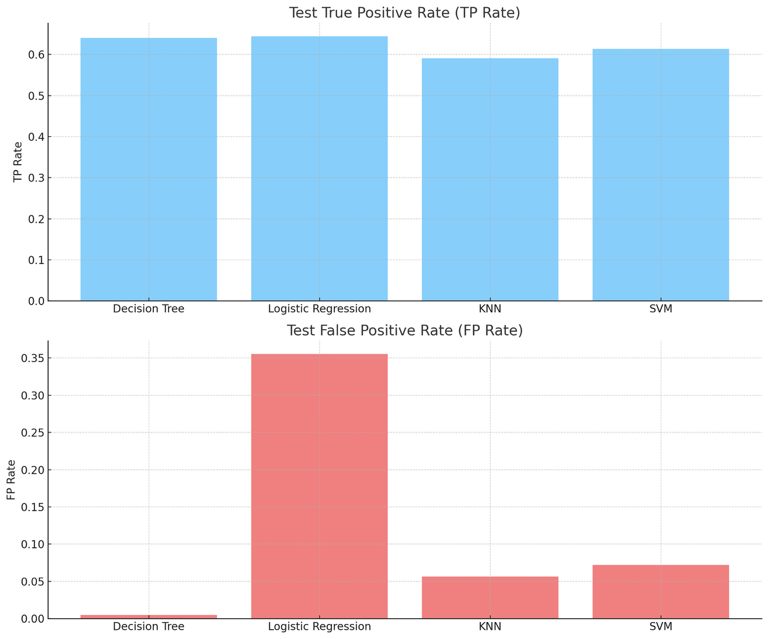
3. Test Recall

4. Test F1 Score

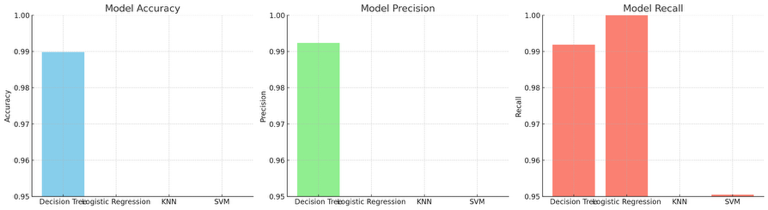


These curves provide a visual representation of the trade-off between the true positive rate and false positive rate for each model.

* Decision Tree (AUC = 0.51)
* Logistic Regression (AUC = 0.53)



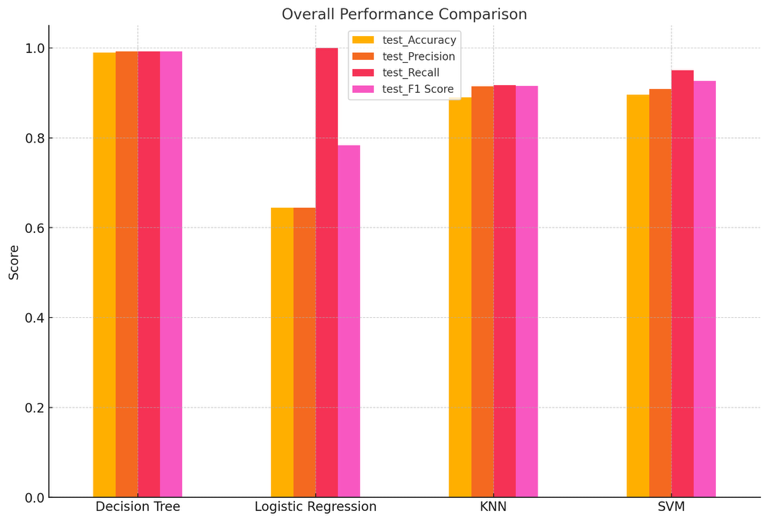
* KNN (AUC = 0.47)
* SVM (AUC = 0.52)

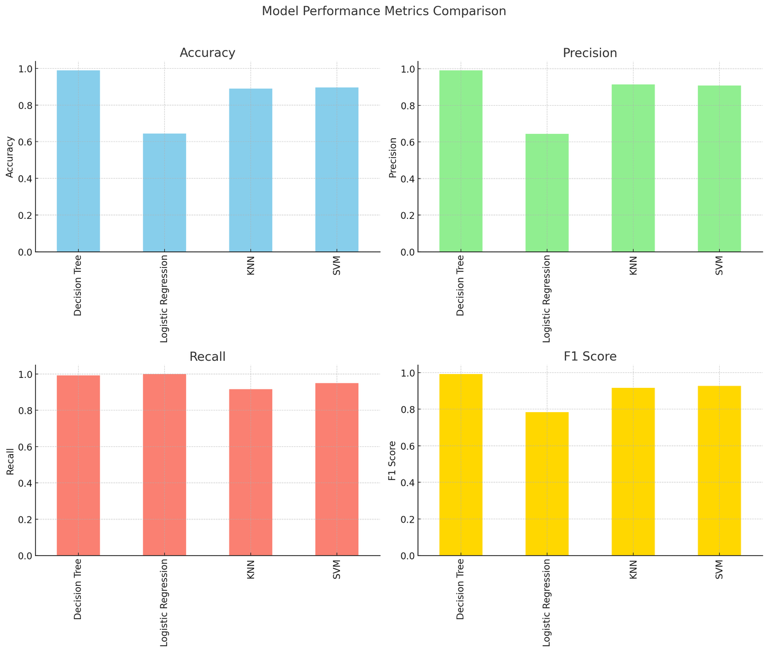


• Accuracy: All models have high accuracy, with Decision Tree and KNN slightly outperforming others.

• Precision: All models show high precision, with KNN leading.

• Recall: Similarly, all models show high recall, with slight variations.

**Visualizations comparing the performance of different models for detecting bots:**

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**Dashboard combining performance comparisons and parameter impact analyses for each model:**

1. \*\*Performance Comparison\*\*: The first row of the dashboard compares the validation AUC across different models and datasets.

2. \*\*Decision Tree Parameters\*\*: The second row shows the impact of `criterion`, `max\_depth`, and `min\_samples\_split` on validation AUC.

3. \*\*Logistic Regression Parameters\*\*: The third row illustrates the effect of `penalty`, `C`, and `solver`.

4. \*\*KNN Parameters\*\*: The fourth row analyzes the influence of `n\_neighbors`, `weights`, and `algorithm`.

5. \*\*SVM Parameters\*\*: The fifth row displays the impact of `kernel`, `C`, and `gamma`.

This dashboard provides a detailed overview of how different models, and their parameters affect performance, enabling better-informed decisions for optimizing your machine-learning models.

