Models Implemented

* Logistic Regression: A baseline linear model.
* Random Forest: An ensemble method that handles non-linear relationships.
* XGBoost: A gradient boosting algorithm known for its performance.
* CatBoost: A gradient boosting algorithm optimized for categorical features.
* MLP (Multi-layer Perceptron): A neural network model.
* LightGBM: A gradient boosting framework that uses tree-based learning algorithms.

**Evaluation and Comparison**

The models were evaluated using the following metrics:

* Accuracy: Percentage of correctly classified instances.
* F1-Score: Harmonic mean of precision and recall.
* ROC-AUC: Area under the Receiver Operating Characteristic curve.

| Model | Accuracy | F1-Score | ROC-AUC |
| --- | --- | --- | --- |
| Logistic Regression | 0.573 | 0.546 | 0.593 |
| Random Forest | 0.572 | 0.589 | 0.594 |
| XGBoost | 0.576 | 0.510 | 0.582 |
| CatBoost | 0.576 | 0.601 | 0.601 |
| MLP | 0.577 | 0.541 | 0.602 |
| LightGBM | 0.572 | 0.588 | 0.595 |

Best Model: CatBoost achieved the highest F1-Score and ROC-AUC, indicating its superior performance.