

# Sailfort Motors

## Employee Retention

### Overview

Sailfort Motors, a leading automotive company, was facing challenges in retaining its valuable employees. With a high turnover rate impacting productivity and morale, the company sought to implement proactive measures to improve employee retention.

### Problem

Sailfort Motors was experiencing a significant churn rate among its workforce, leading to increased recruitment costs, loss of expertise, and reduced team cohesion. The company needed a data-driven solution to identify at-risk employees and implement targeted retention strategies.

### Approach

To address the employee retention challenge, we embarked on a machine learning project to develop predictive models that could forecast employee churn. Leveraging powerful algorithms like decision trees, random forests, and XGBoost, we developed accurate models to assist Sailfort Motors in retaining its valuable talent.

### Details

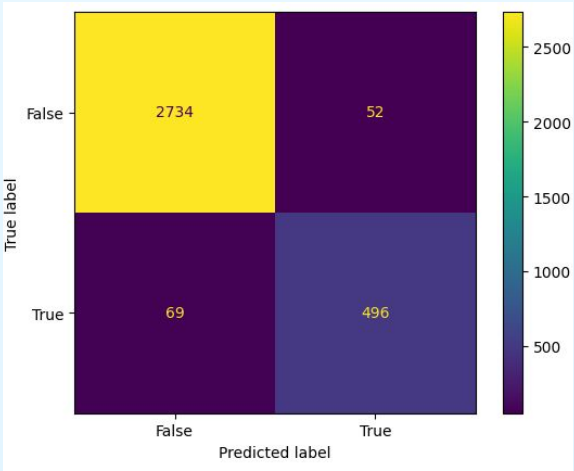
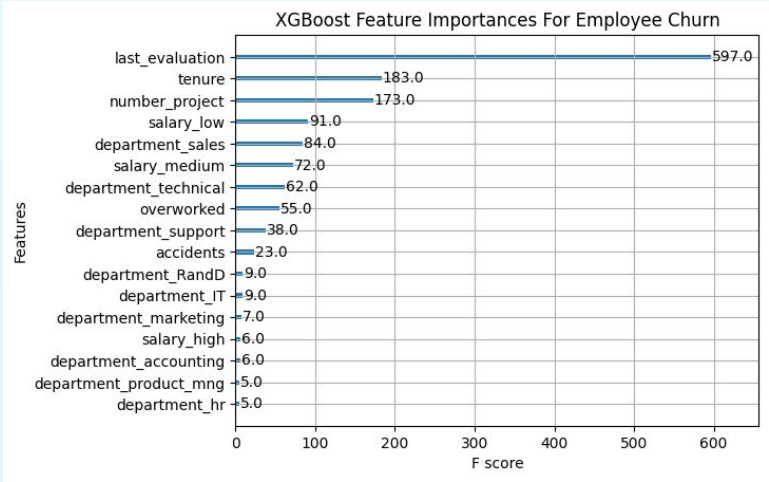
Trained multiple machine learning models, including decision trees, random forests, and XGBoost.

Implemented hyperparameter tuning to optimize model performance.

Identified the XGBoost model as the champion model due to its balanced performance and robustness to overfitting.

### Confusion Matrix of Champion Model

1. The Model shows a tendency for higher count of false positives (Upper-right quadrant)
2. This suggests that the Model often predicts certain employees will leave the company when, in reality, they will not
3. Despite this inclination, it's crucial to highlight that the model's overall reliability remains unaffected. It continues to be a valuable instrument in understanding and addressing employee turnover.



### Result Summary

The **XGBoost model**, after feature engineering, outperformed other models with an **AUC of 92.96%** and **accuracy of 96.39%** on the test set. Its high **AUC score** makes it a reliable tool for HR to predict employee attrition and aid in decision-making for improved retention.

### Reflections/Next Steps

1. **Reward Overworked Employees:** Set up a system for those working long hours, either through financial rewards or balanced work hours. Recognize and incentivize hard work through bonuses or public recognition. Conduct regular performance reviews for self-improvement.
2. **Promote Fairness:** Ensure transparent promotion policies. Investigate departments with low promotion rates. Set clear promotion criteria for employee understanding.
3. **Employee Tenure:** Consider promoting employees with at least four years of tenure or investigate dissatisfaction among them.
4. **Workload Management:** Limit the number of projects per employee to 3-4.
5. **Recognition System:** Establish a system to acknowledge employee contributions.
6. **Exit Feedback:** Collect feedback from departing employees for insights.