Salifort Motors Employee Turnover Machine Learning Model

Prepared for: Salifort Motors Leadership Team

Project Overview
This project focuses on analyzing employee turnover data at Salifort Motors to develop a predictive model that can identify which employees are at risk of leaving the company, considering the key drivers of turnover. **This report offers key insights into our predictive model and recommendations.**

Details

Top Feature Importance for Employee Turnover Prediction

Key Insights

- To obtain a model with the **highest predictive power**, our data team developed a **random forest** model

- **Benefits** — very accurate and flexible

- **Limitations** —it's not always easy to understand why the model makes certain predictions (compared to **less accurate models**)

- The data was split into an **80-20 train/test split**, meaning we **trained** our model on 80% of the data and **tested** it on 20%

- The original data had **3008 duplicated rows** (~20% of the total data), which were removed for our model
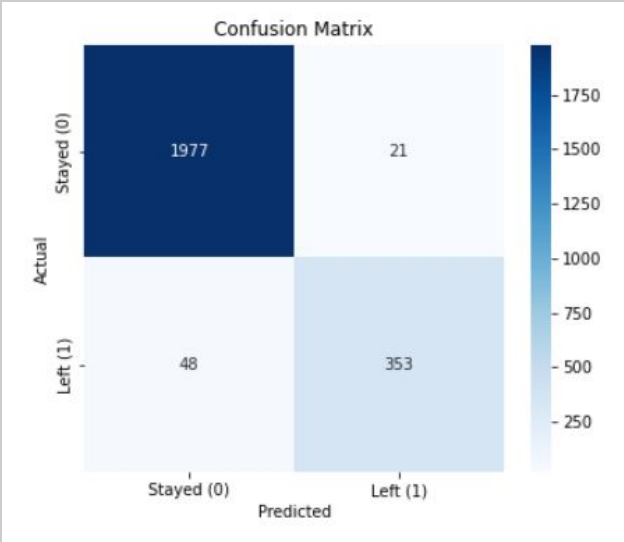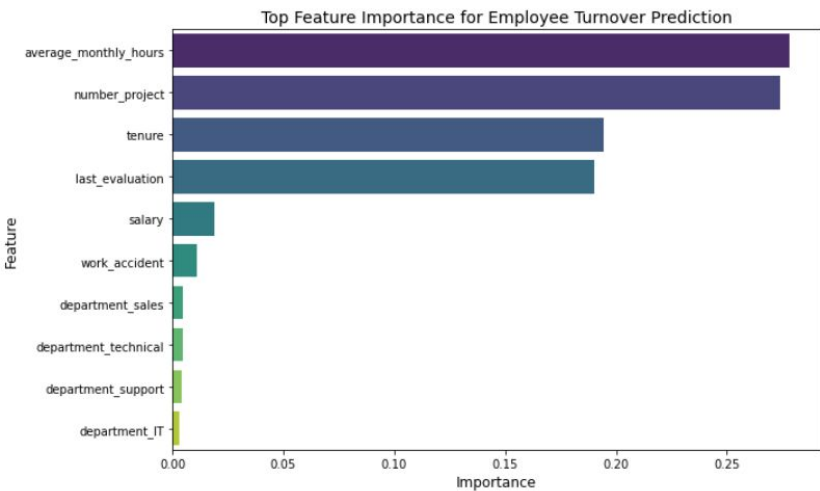
- We removed **"satisfaction_level"** from our graph since satisfaction is **vague** — this allowed us to focus on **actionable variables**

- Our model accurately predicted **97.12%** of employees who stayed and left, identified **94.39%** of those likely to leave, and correctly flagged **88.03%** of actual departures **(at-risk employees)**

Next Steps

★ Manage work hours more **effectively** — Assess the necessity of **long work hours** and consider reducing expectations

★ Explore offering more **flexible working arrangements** or provide **clearer compensation structures** for **overtime** to ensure work-life balance and **prevent burnout**

★ **Limit** the number of projects per employee — **Set a cap** on the number of projects an employee can be assigned to

★ Promote **leadership opportunities** for **long-tenured** employees — Implement promotion initiatives or **leadership development opportunities** for employees who have been with the company for at least **four years**

Confusion Matrix