

Salifort Employee Retention Project | ML Model Results

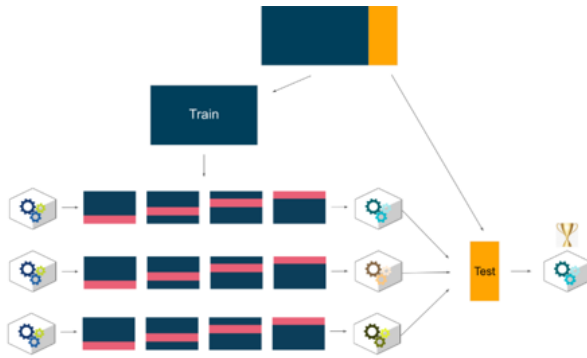
Prepared for: Salifort Leadership & HR Team

Overview / Objective:

- The Salifort data team was tasked with focusing on improving employee retention. The insights that the data team gathers will help identify specific factors that contribute to employee attrition.
- The goal for this project is to develop a machine learning (ML) model that predicts factors for employees leaving the company.**

Methods:

- To obtain a model with the highest predictive power, the Salifort data team developed three different models to cross-compare results: **decision tree, random forest and XGBoost.**
- Data was split into training and test sets. The training set was used to fit the model and estimate the optimal parameters. Once the parameters were determined, each model was evaluated on the test set.



Results:

- According to the barplots of the decision tree, random forest, and XGBoost models, the most relevant feature variables with the highest importance are **'last_evaluation', 'number_project', 'tenure', and 'overworked'**. These variables are helpful in predicting the outcome variable **'left'**.
- Both XGBoost and Random Forest models performed similarly well. However, XGBoost achieved a better F1 score, which is more helpful for identifying the minority class (employees who left). In contrast, Random Forest had a superior AUC score, indicating a better ability to distinguish between employees who leave and those who stay at the company.**
- The ensembles of tree-based models are more valuable than a singular logistic regression model because they achieved higher scores across all evaluation metrics and required less preprocessing of the data.

Insights / Next Steps:

- Place limits on the number of projects that employees can work on at a given time.
- For employees with at least a tenure of four years, consider a promotion or investigate on why dissatisfaction is very low.
- Reward employees for working longer hours or don't require them to do so.
- Inform employees about company overtime pay policies and clarify any expectations around workload and time off.
- Understand and address the company work culture by incorporating company wide workshops and more frequent team discussions.
- Establish guidelines for employees to understand what it takes to achieve a high evaluation score.
- Perform surveys to investigate why employees with more than six years of tenure are less likely to leave the company.

