Salifort Motors

Employees Retention Project

Project Overview

The company has been striving to create a corporate culture that supports employee success and professional development. However, there is a high rate of turnover among Salifort employees resulting in rising costs in the financial sense.
I am assigned with the project to analyze the survey data gathered by Human Resource team and come up with ideas for how to increase employee retention.

Details

satisfaction_level, *tenure* ,*number_project*,and *average_monthly_hours* dominate the feature importance
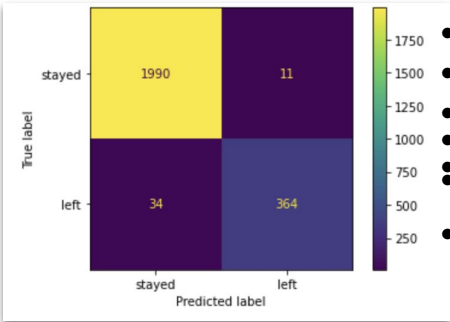
- *The data is imbalance.*
- *We focus on the bottom-right pane*
- *The model predicts 364 out of 398 actual left employees .*
- *The correct predictions is 364 out of 375*
- *This explains the high recall, precision and thus f1 scores*

Key Insights

Task Completed

- Explore the data
- Data cleaning
- EDA
- Hypothesis testing
- Prediction model building
- Model comparison and selection
- Champion model assessment
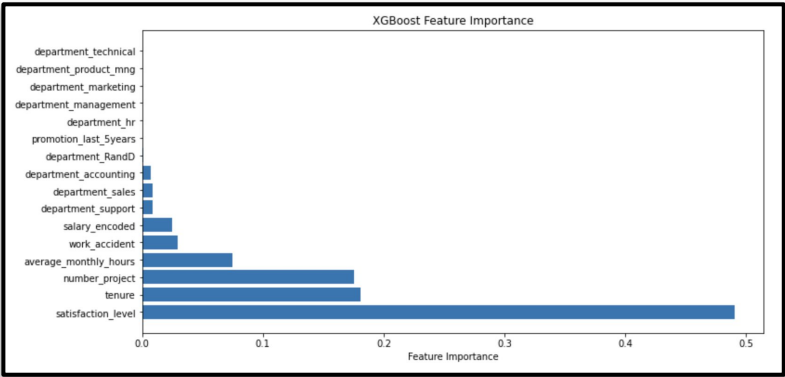- Generate Key Insights

Key Takeaways

- Dropped `last_evaluation` as model feature
- Logistic Regression, Random forest and XGBoost models are created
- XGBoost outperforms among three
- Overall metrics are satisfying

Model Comparison

- XGBoost has the highest f1 score of 95.02
- Its recall score is also high as 92.79
- Overall accuracy is 98.38
- Random Forest follows; Logistic Regression performs the worst

	Model	F1	Recall	Precision	Accuracy
0	XGBoost	0.950241	0.927900	0.973684	0.983846
1	Random Forest	0.944984	0.915361	0.976589	0.982282
2	Logistics Regression	0.238095	0.156740	0.495050	0.833246

Next Steps

1. Focus on the `satisfaction_level` as a benchmark of the company management.
2. Human Resources team could base on the result to allocate the effort put on existing employees or future hiring strategy.
3. Feasible company actions such as employees loyalty bonuses based on `tenure`, reallocation of `number_project` and `average_monthly_hours` among employees, etc.
4. Review the model periodically after implementation of the employees retention policies.