Predicting employee turnover at Salifort Motors (GADAC Capstone)

Building and evaluating a model to gain insight into employee turnover at Salifort Motors

Overview

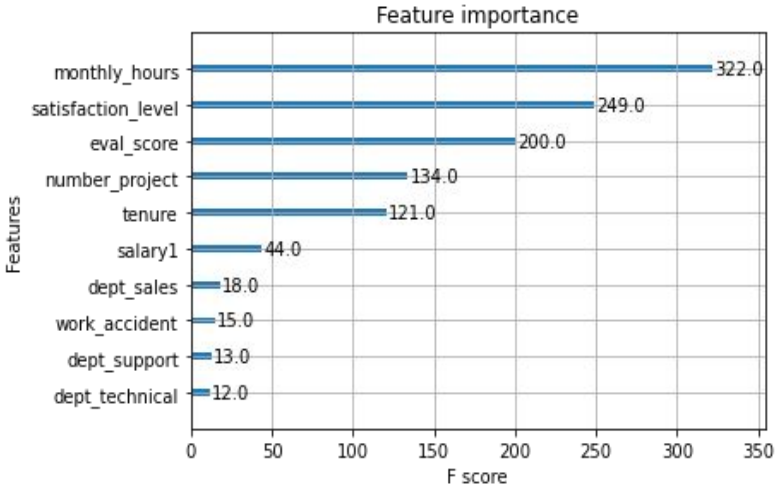
Salifort Motors has been experiencing an undesirably high rate of employee turnover. This leads to higher hiring and training costs, and is indicative of employee dissatisfaction. The data team at SM was tasked with designing and evaluating a model to predict employee turnover and to explore key factors that may be related to high turnover rates. The data team developed and evaluated multiple models to gain insight into factors that influence employee turnover. Some of these models were able to accurately predict turnover, allowing us to explore and address factors that influence employee turnover.

Objective

Our objective was to create a model that could accurately predict whether or not an employee would leave the company based on relevant factors such as satisfaction level, recent evaluation score, monthly hours worked, number of projects, and other factors. Predicting whether or not employees will leave, and evaluating factors relevant to employee turnover will allow SM to improve employee satisfaction and employee retention, thus reducing hiring and training costs.

Results

Three models were created to attempt to predict employee turnover. A logistic regression model did not perform well, with an f1 score of 0.34. A random forest model performed much better, with an f1 score of 0.94. The champion model, an XGBoost model, performed slightly better, with an f1 score of 0.95 on unseen test data. Exploration of the two high-performing models revealed that the most relevant features in predicting turnover were monthly hours worked, satisfaction level, evaluation score, and number of projects. Further analysis should be performed to analyze the specific effects of each of these highly-predictive features on employee turnover.



Feature importance plot of the XGBoost model created to predict employee turnover. This plot illustrates that the most important features were monthly hours, satisfaction level, evaluation score, and number of projects.

Next Steps

Processes and programs should be implemented to increase employee satisfaction and reduce employee turnover. Specifically, focusing on monthly hours worked, number of projects, evaluation scores, and other factors relevant to satisfaction. Further research should be conducted to inform what influences employee satisfaction and attempt to improve it.