Salifort Motors

## Employee Retention Predictive Model

ISSUE / PROBLEM

- There has been high employee turnover at Salifort Motors
  - metric inclusive of firing and quitting

- Salifort Motors requests a model to predict employee turnover & retention.

RESPONSE

- Drafted a proposal using the PACE workflow
- Retrieved dataset, performed EDA, feature transformation, and modeling
- Created two predictive models:
  - Logistic Regression model
  - Random Forest Classifier
- Random Forest Classifier is the champion model
  - Precision Score: 99.0%
  - Recall Score: 93.4%
  - F1 Score: 96.2%
  - Accuracy Score: 98.7%

IMPACT

- Employee turnover is expensive, the company invests a lot in recruitment, training and upskilling.
- A successful predictive model for employee turnover & retention could alleviate these issues and cut costs.
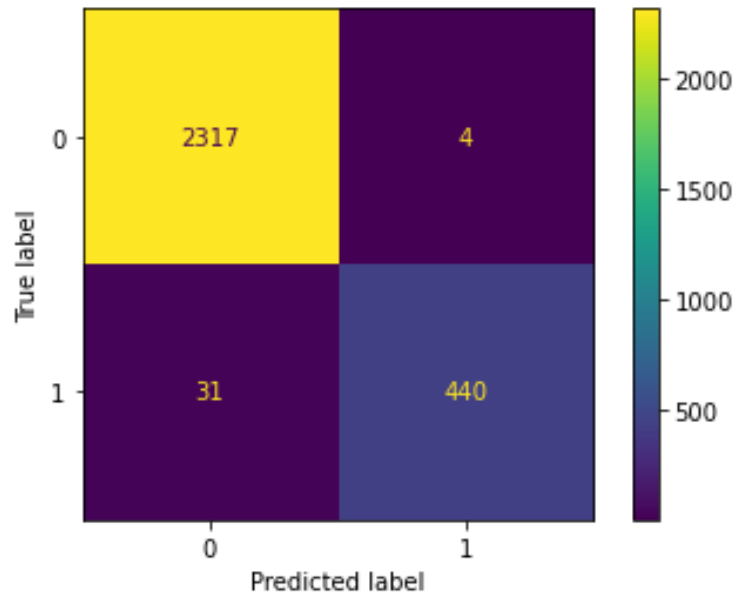
Random Forest Classifier Confusion Matrix
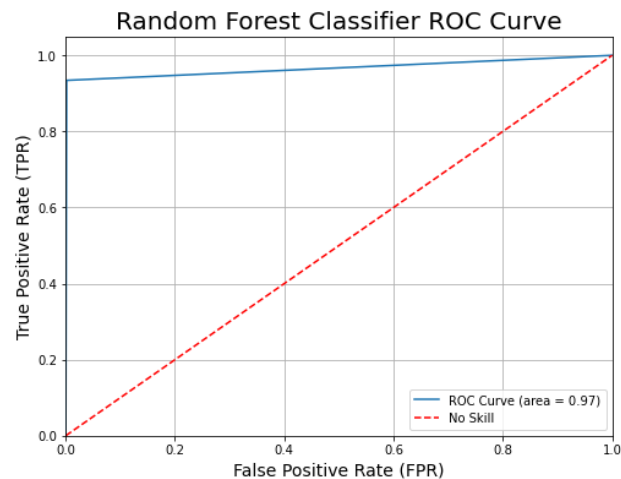
Random Forest Classifier predictive power versus a random guess.

KEY INSIGHTS

- Key metrics identified by the feature importance plot are:
  - Satisfaction Level, Tenure, Last Evaluation, Number of Projects, Average Monthly Hours
- Random Forest Classifier model is the champion model:
  - Surpasses benchmark of 65% efficacy
  - Recommend that the model be deployed to further evaluate its efficacy

Recommendations:
- Further investigate key metric relationships in relation to notable insights identified in EDA

Notable insights:
- Large average hourly disparity per department, disproportionate of office size
- Only 5 departments had promotions in the last 5 years, with 51 to 68% of attrition per department being employees with low salaries
- Salary should be explored as a continuous variable, so that a Linear Regression analysis can be explored.