Employee churn measure

Generated by Ruth Yakubu on 09/09/2022

Model Summary

Purpose

This model provides a measure of employee leaving or staying with a company

This is a classification model

How the model is evaluated

This model is evaluated on a test set with 441 datapoints.

Target values

Here are your defined target values:

- accuracy_score: >= 0.85
- Top important features: 10
- Fairness ratio in accuracy_score

Model Performance

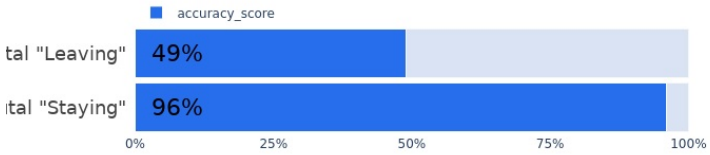
Observe evidence of your model performance here:

89% Accuracy

89% of data points have the correct prediction.

Accuracy = correct predictions / all predictions
= (363 + 31) / 441

	Acutal "Leaving"	Acutal "Staying"
Predicted "Leaving"	363 correct prediction	32
Predicted "Staying"	15	31 correct prediction



Data Explorer

Evaluate your dataset to assess representation of identified subgroups:

YearsAtCompany

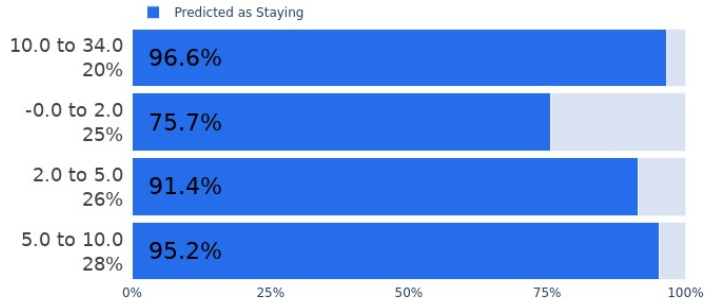
"5.0 to 10.0" have 92.0% accuracy_score

"2.0 to 5.0" have 94.8% accuracy_score

"-0.0 to 2.0" have 80.2% accuracy_score

"10.0 to 34.0" have 89.9% accuracy_score

Predicted classification output of the different subgroups are as follows:



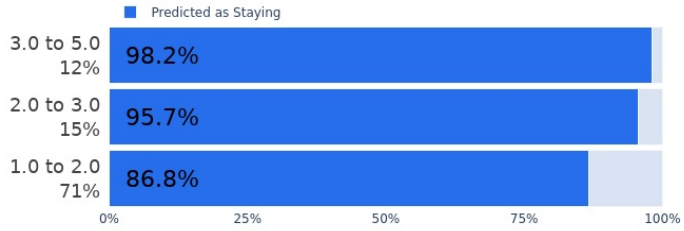
JobLevel

"1.0 to 2.0" have 88.3% accuracy_score

"2.0 to 3.0" have 89.9% accuracy_score

"3.0 to 5.0" have 94.5% accuracy_score

Predicted classification output of the different subgroups are as follows:



Age

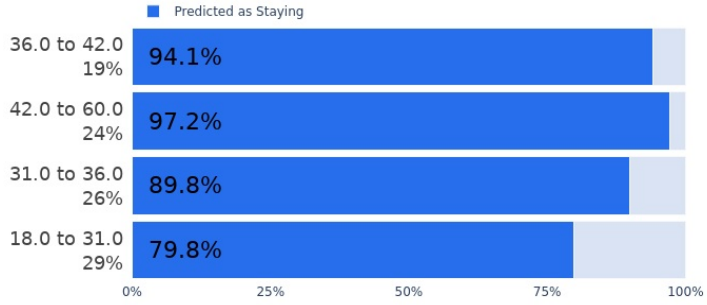
"18.0 to 31.0" have 84.5% accuracy_score

"31.0 to 36.0" have 89.0% accuracy_score

"42.0 to 60.0" have 93.6% accuracy_score

"36.0 to 42.0" have 91.8% accuracy_score

Predicted classification output of the different subgroups are as follows:



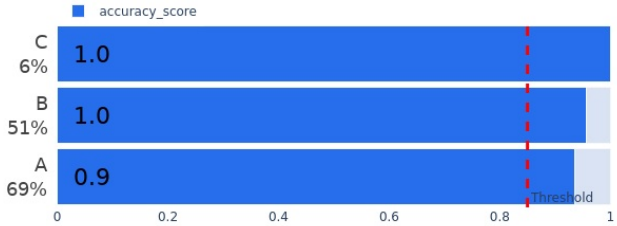
Cohorts

Observe evidence of model performance across your passed cohorts:

Highest ranked cohorts: accuracy_score

- A: YearsSinceLastPromotion <= 9.50
  AND
  YearsAtCompany > 2.50
- B: OverTime == No
  AND
  YearsSinceLastPromotion <= 9.50
  AND
  YearsAtCompany > 2.50
- C: PercentSalaryHike > 17.50
  AND
  YearsAtCompany <= 2.50

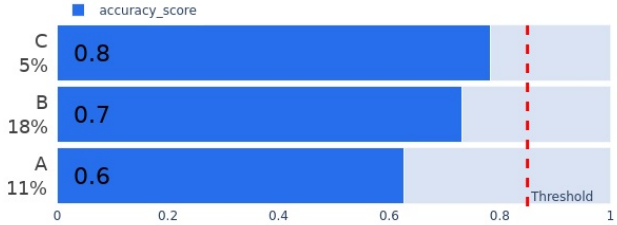
Highest ranked cohorts: accuracy_score



Lowest ranked cohorts: accuracy_score

- A: TotalWorkingYears <= 6.50
  AND
  PercentSalaryHike <= 17.50
  AND
  YearsAtCompany <= 2.50
- B: PercentSalaryHike <= 17.50
  AND
  YearsAtCompany <= 2.50
- C: YearsSinceLastPromotion > 9.50
  AND
  YearsAtCompany > 2.50

Lowest ranked cohorts: accuracy_score

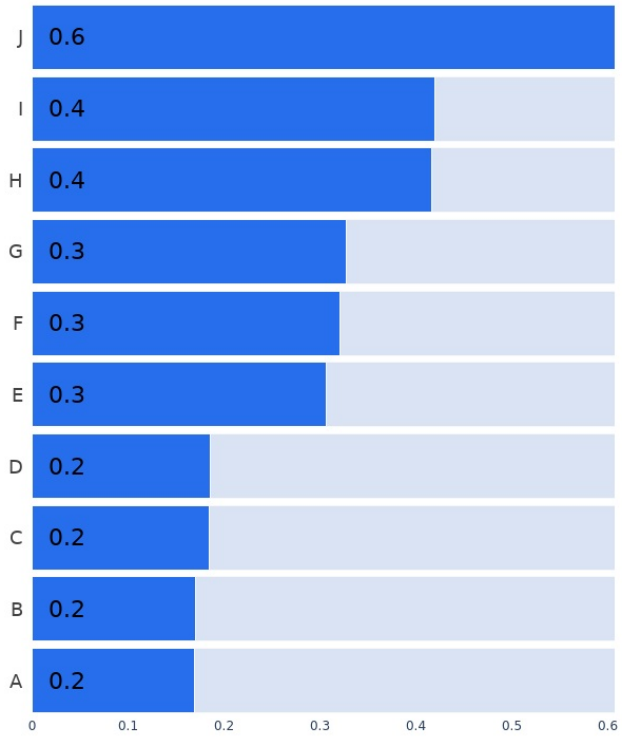


Feature relevance (explanability)

Understand factors that have impacted your model predictions the most. These are factors that may account for performance levels and differences.

- A: JobInvolvement
- B: BusinessTravel
- C: DistanceFromHome
- D: YearsSinceLastPromotion
- E: YearsInCurrentRole
- F: EnvironmentSatisfaction
- G: JobSatisfaction
- H: StockOptionLevel
- I: JobRole
- J: OverTime

Feature Importance



Fairness

Understand your modelâ€™s fairness issues using group-fairness metrics across sensitive features and cohorts. Pay particular attention to the subgroups who receive worse treatments (predictions) by your model.

Feature "Gender"

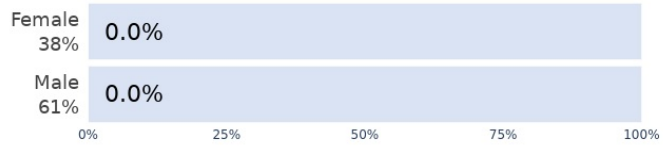
"Female" has the highest accuracy_score: 0.91

"Male" has the lowest accuracy_score: 0.88

Minimum ratio of accuracy_score is 0.97

Feature "Gender"

Selection rate



Analysis across cohorts

	accuracy score
Male	0.88
Female	0.91

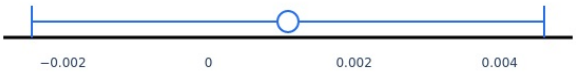
Causal

Causal analysis answers real world what if questions about how changes of treatments would

impact a real world outcome.

Age

On average, increasing "Age" by 1 unit increases the prediction outcome by 0.001



Top data points responding the most to treatment on "Age":

Data points which experience the largest treatment impact (causal effect) when adjusting "Age"

Index	Current Value	Recommended Treatment	Effect Estimate
190	52	decrease	0.19
425	50	decrease	0.17
701	53	decrease	0.16

DailyRate

On average, increasing "DailyRate" by 1 unit increases the prediction outcome by 0.0

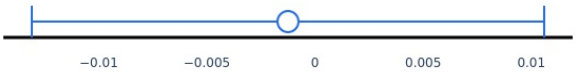
Top data points responding the most to treatment on "DailyRate":

Data points which experience the largest treatment impact (causal effect) when adjusting "DailyRate"

Index	Current Value	Recommended Treatment	Effect Estimate
1434	585	increase	0.06
914	177	increase	0.06
683	867	increase	0.05

YearsAtCompany

On average, increasing "YearsAtCompany" by 1 unit increases the prediction outcome by -0.001



Top data points responding the most to treatment on "YearsAtCompany":

Data points which experience the largest treatment impact (causal effect) when adjusting "YearsAtCompany"

Index	Current Value	Recommended Treatment	Effect Estimate
1102	3	decrease	0.04
1434	9	decrease	0.04
580	3	decrease	0.04