Who’s looking for a new job

...

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Overview

This project designed to understand signs that suggest a person is seeking new jobs, identify them and market job openings to them.

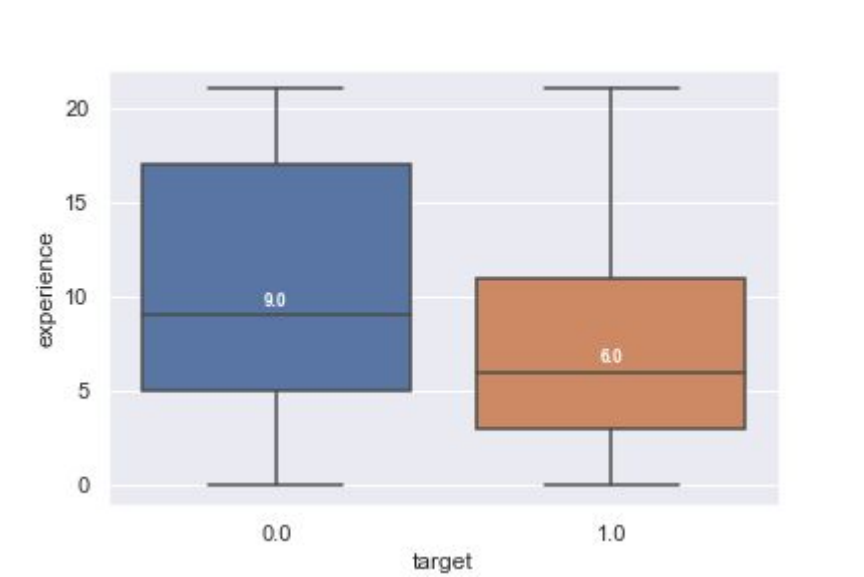
The goal is to predict if a person is truly looking for a new job.

EDA and Findings

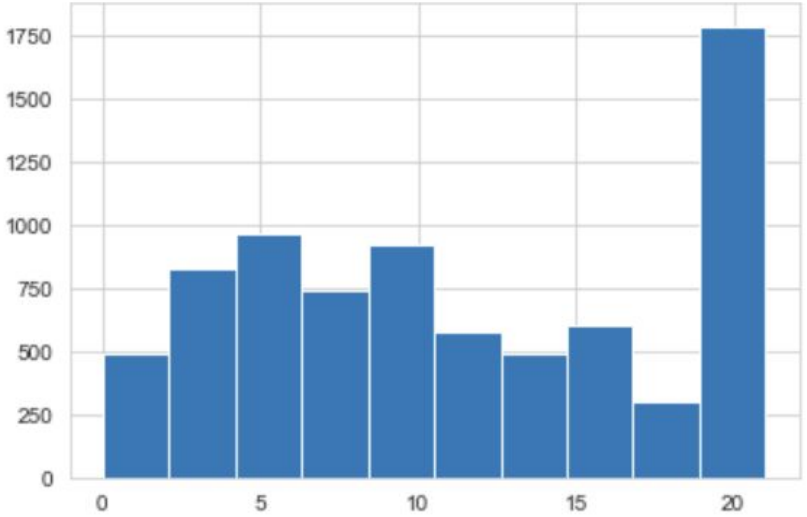
Understanding the Treatment

Data Issue	Feature	Treatment
• Categorical features with many values • Missing data • Imbalanced target (~0.8 people aren't looking for new job)	• City development index • Relevant experience • University • Major discipline • Company size, type • Training hours	• Assign number according to categories' order • Fill missing with zero • Convert major into stem or not flag • Lastly, implement class weight

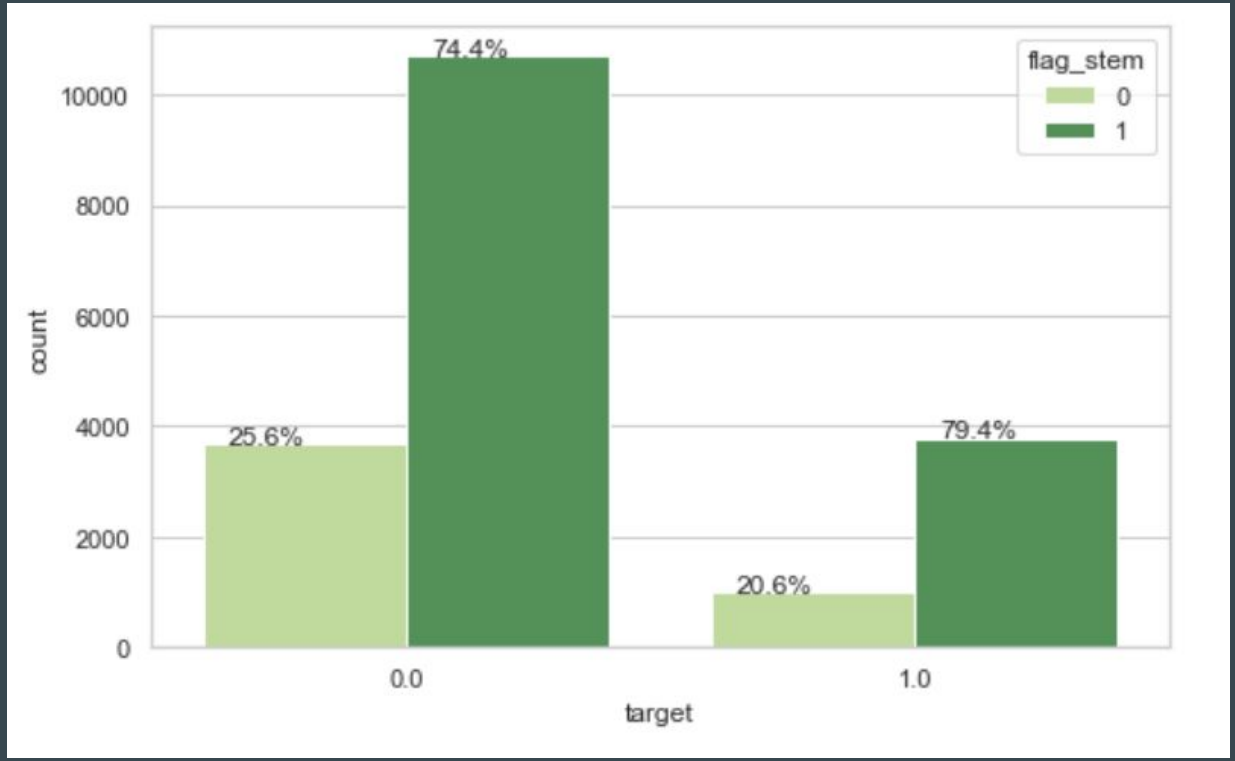
Separation in years of experience



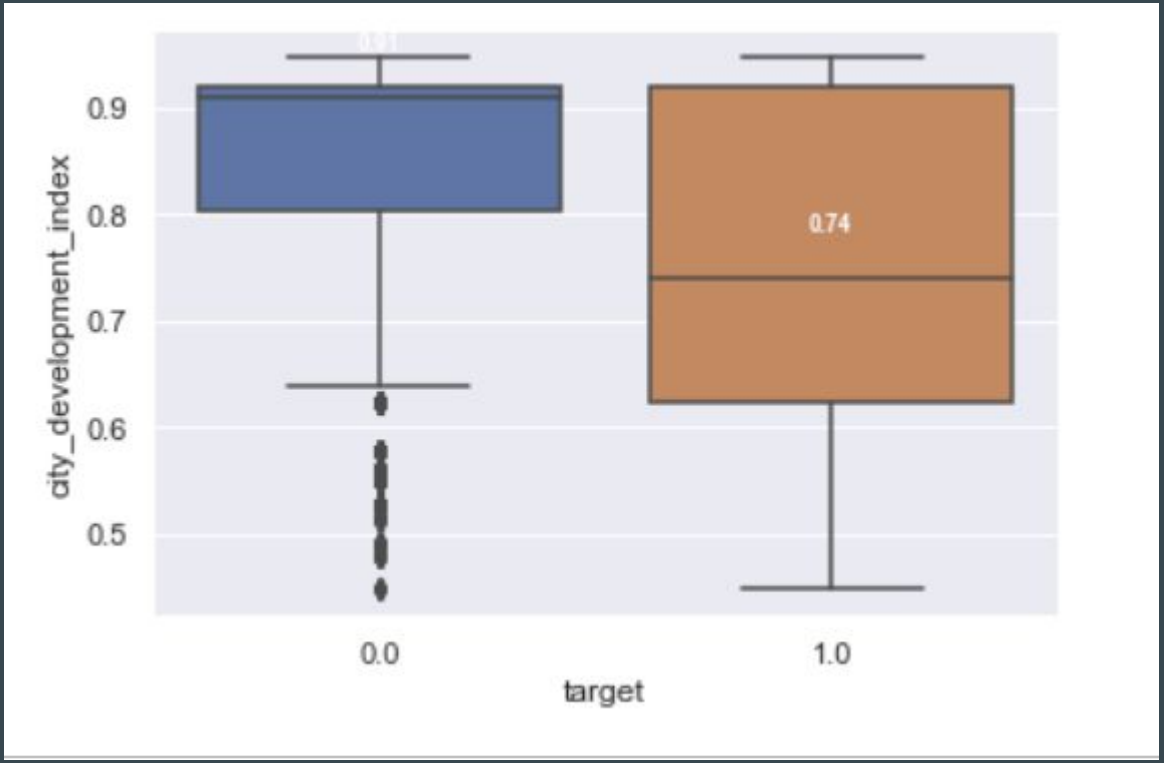
Distribution of experience



Slight difference in stem major flag



In a relatively developed city



Model

Model Criteria

F1 score: A balance between precision and recall.

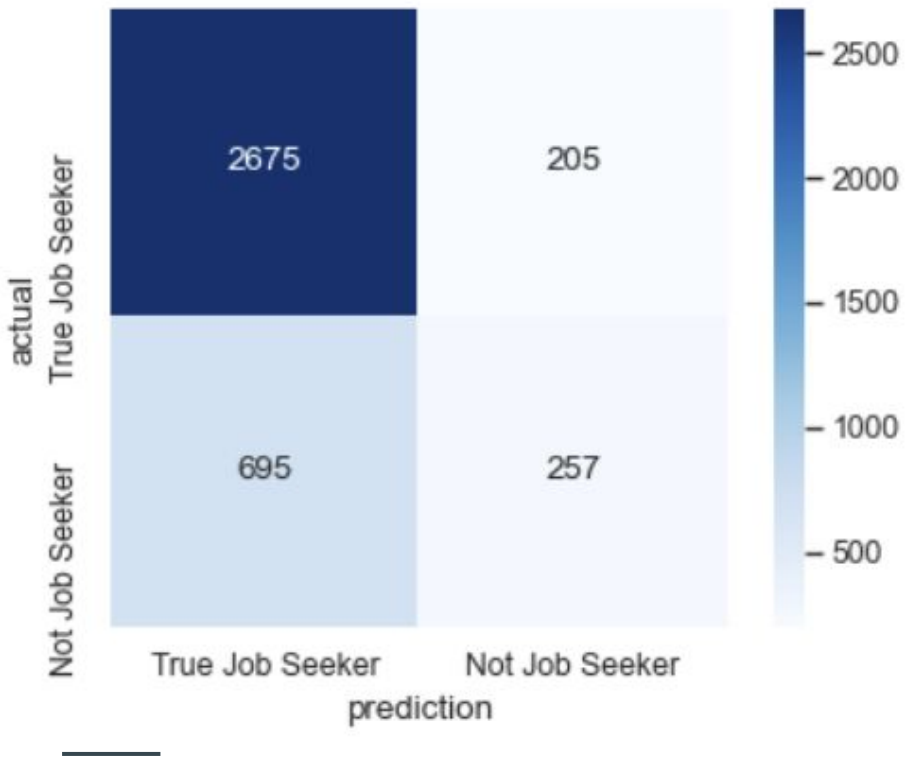
Context: Balancing between miss true job seekers vs HR spending time and money chasing someone who do not plan to change job.

Base - Logistic Regression

Precision: 0.55

Recall: 0.27

Test F1: 0.36

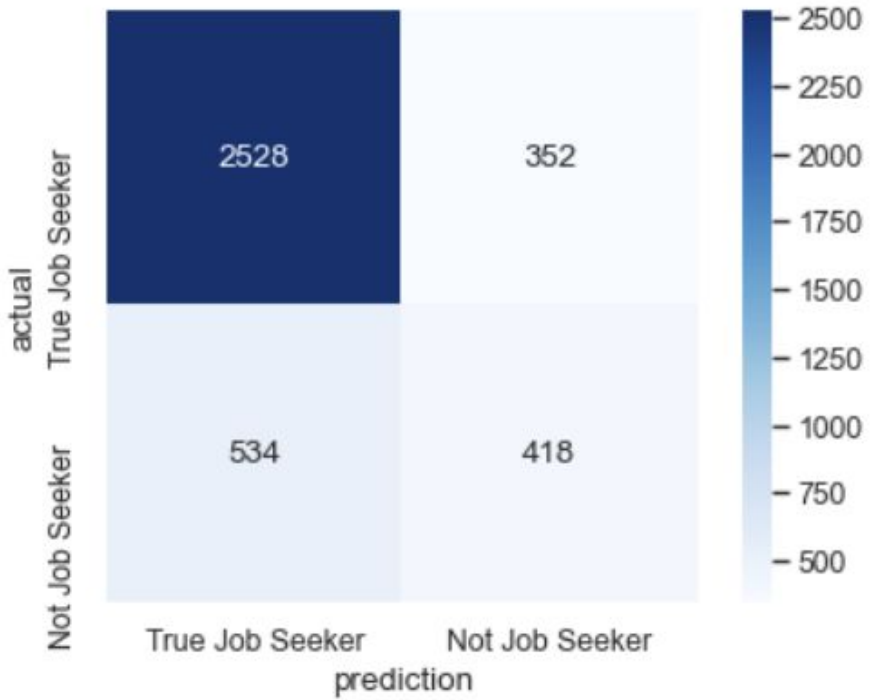


Random Forest

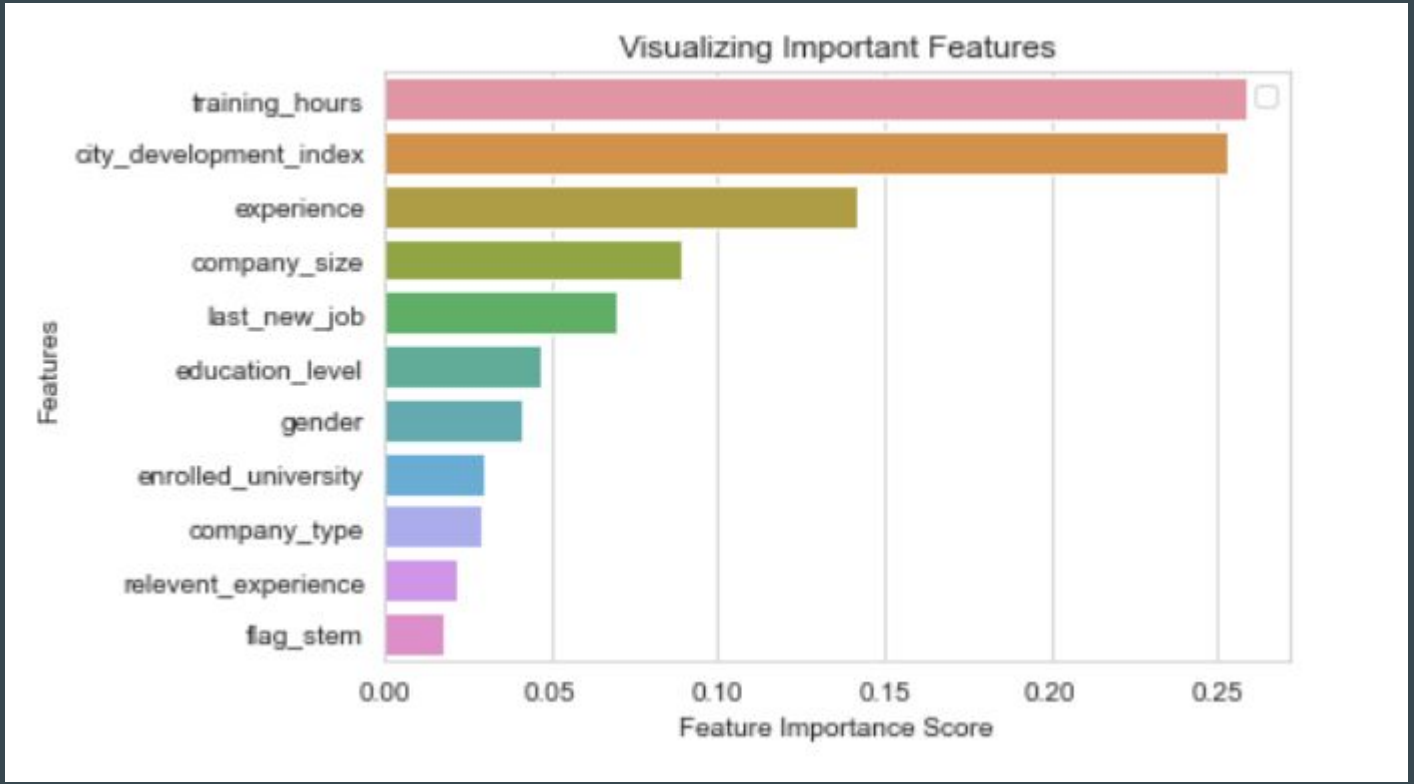
Precision: 0.54

Recall: 0.44

Test F1: 0.48



Leading features in Random Forest Model

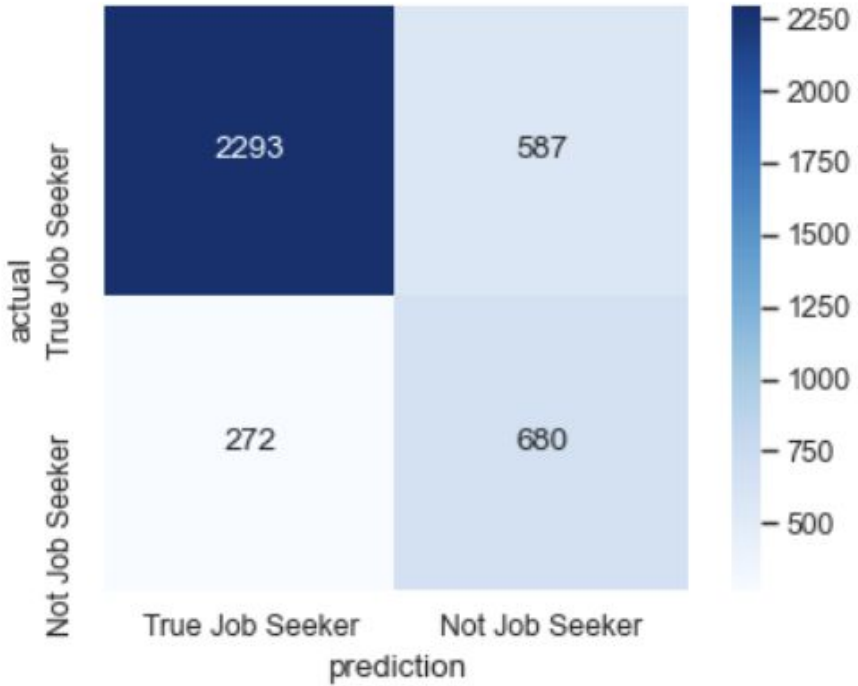


Random Forest - Tuned Balanced Class Weight

Precision: 0.54

Recall: 0.71

Test F1: 0.61



Conclusion

Leading factor that suggest a person might seeking new jobs

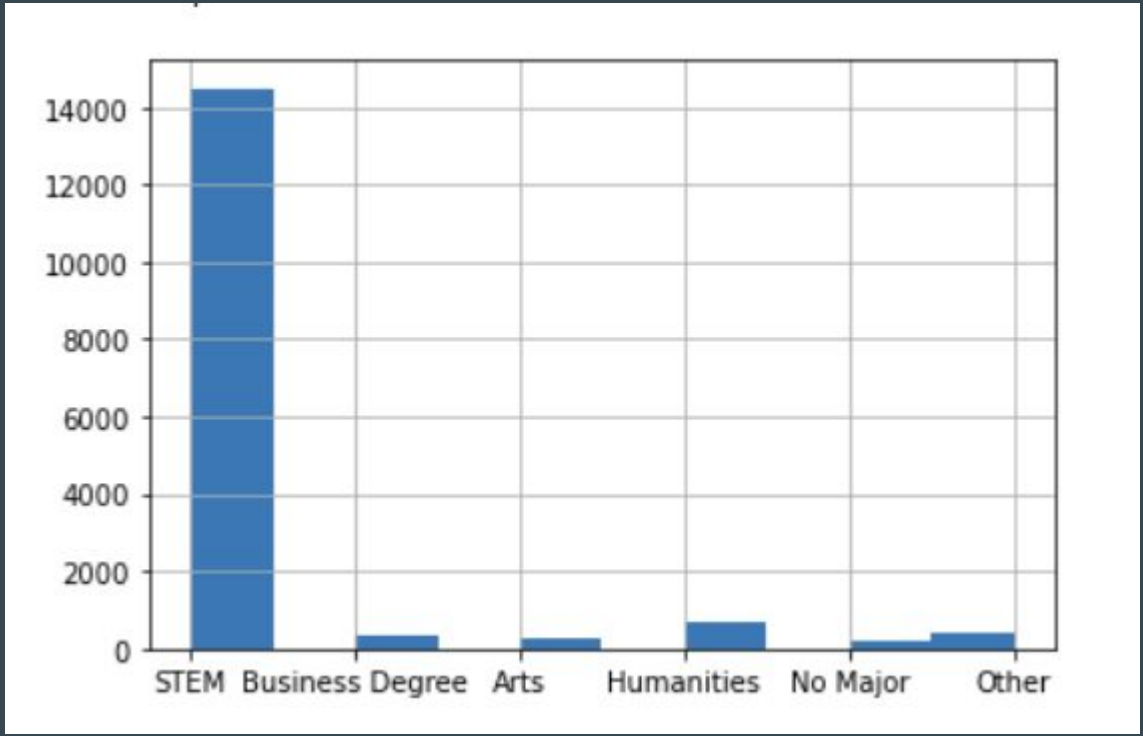
- Spend long hours in training
- In a relative developed city
- Have 4-10 years of work experience

Model: Random Forest (Tuned & Balanced Class weight)

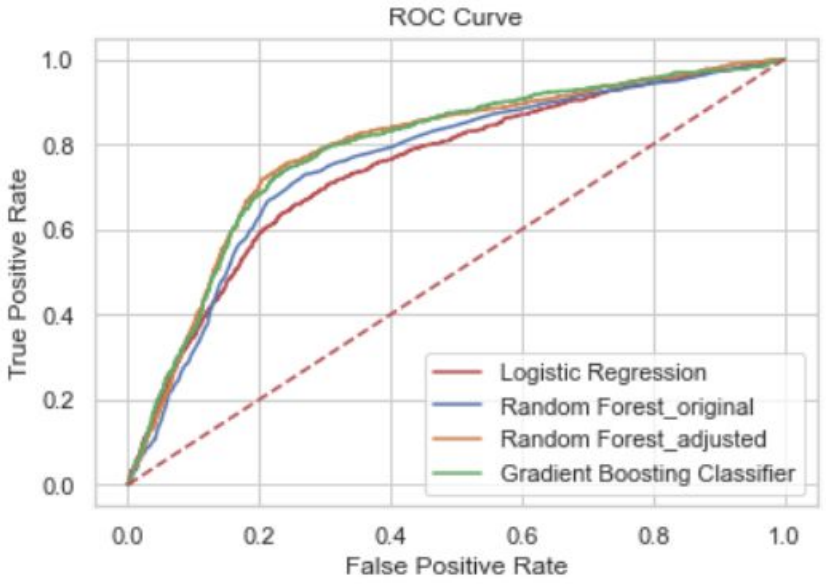
- Similar precision
- 0.44 lift in recall
- 0.25 lift in F1 score

Reference

Most major is STEM



ROC Curve


ROC Curve
True Positive Rate
False Positive Rate
0.0
0.2
0.4
0.6
0.8
1.0
Logistic Regression
Random Forest_original
Random Forest_adjusted
Gradient Boosting Classifier

LR Tuning

Logistic Regression Model best F1 score 0.543