

Introducing
a bank for your
communities.



Introducing
a bank for your
communities.

FDIC

REDUCE YOUR
DAILY EXPLETIVES.

Truist





Hi there! I'm a software engineer based in NY and working for the UN, and an aspiring **data scientist** at Flatiron Academy

Barto Molina, Flatiron DS, April 2019 cohort



the problem methodology

- ✓ Predict customer satisfaction
- ✓ Dataset preparation
- ✓ Machine learning algorithms



features types



numerical features

Related to user account. i.e. balance.



categorical features

Like the different products associated to the users.



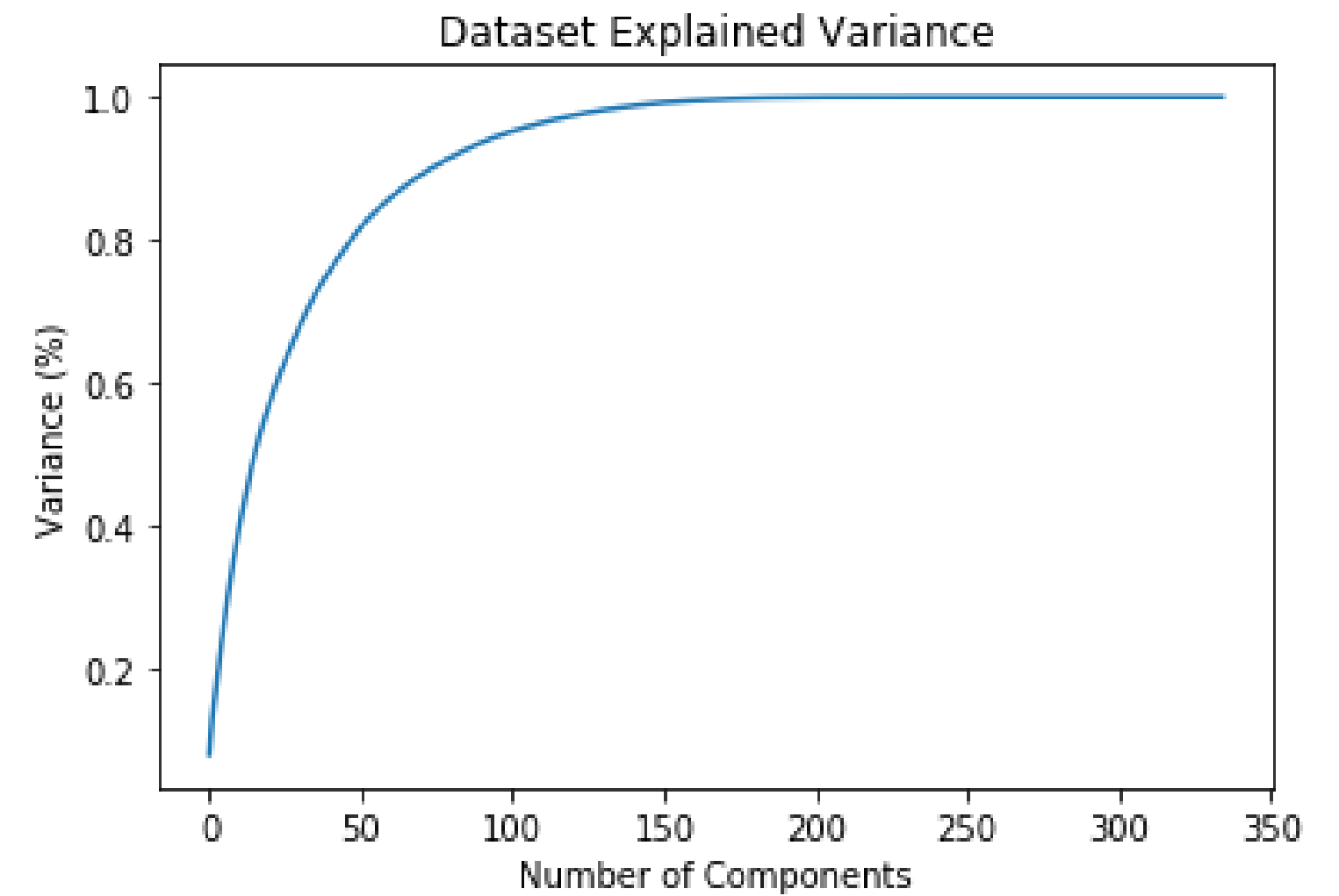
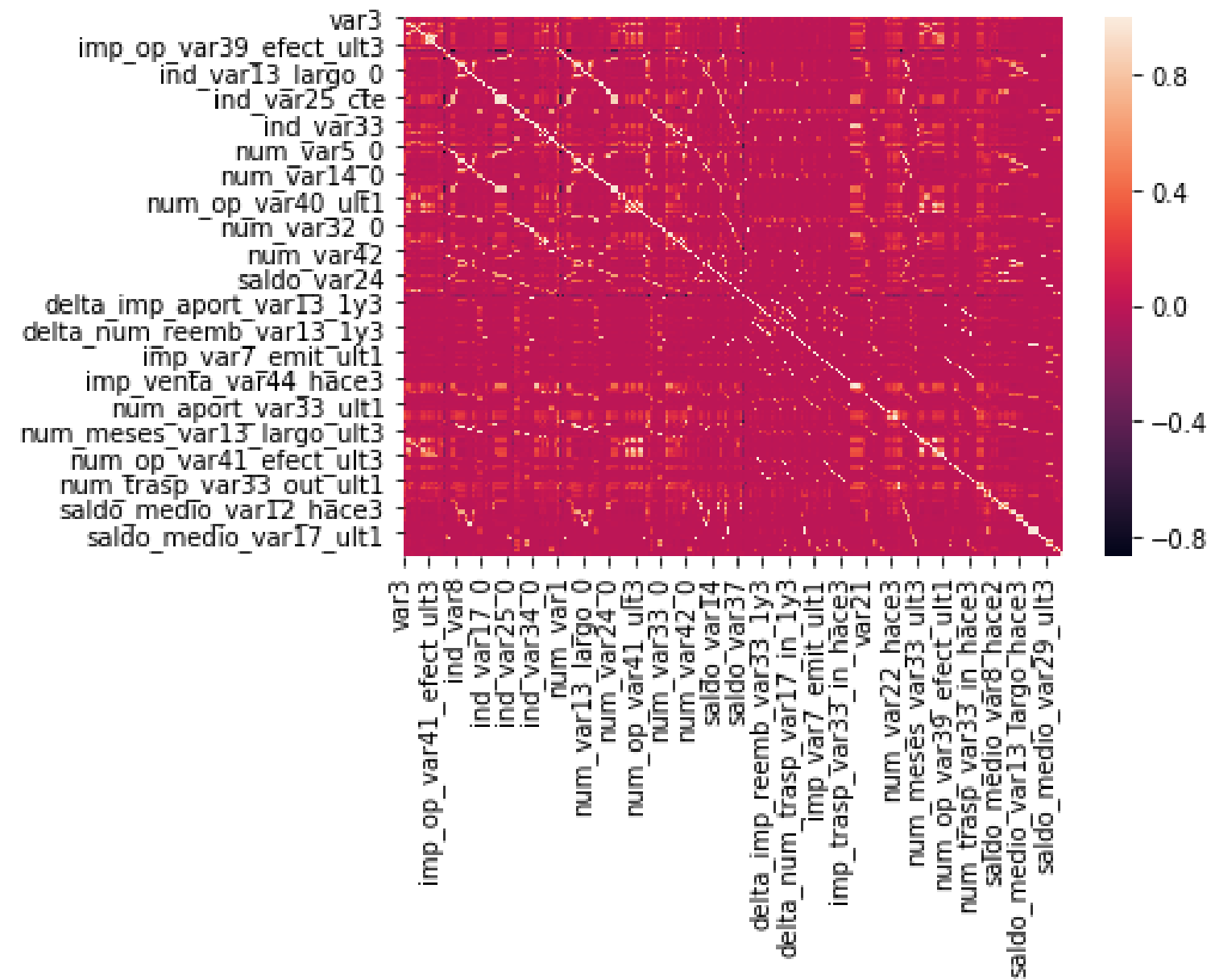
other features

Country, Age, value of the Mortgage.



features

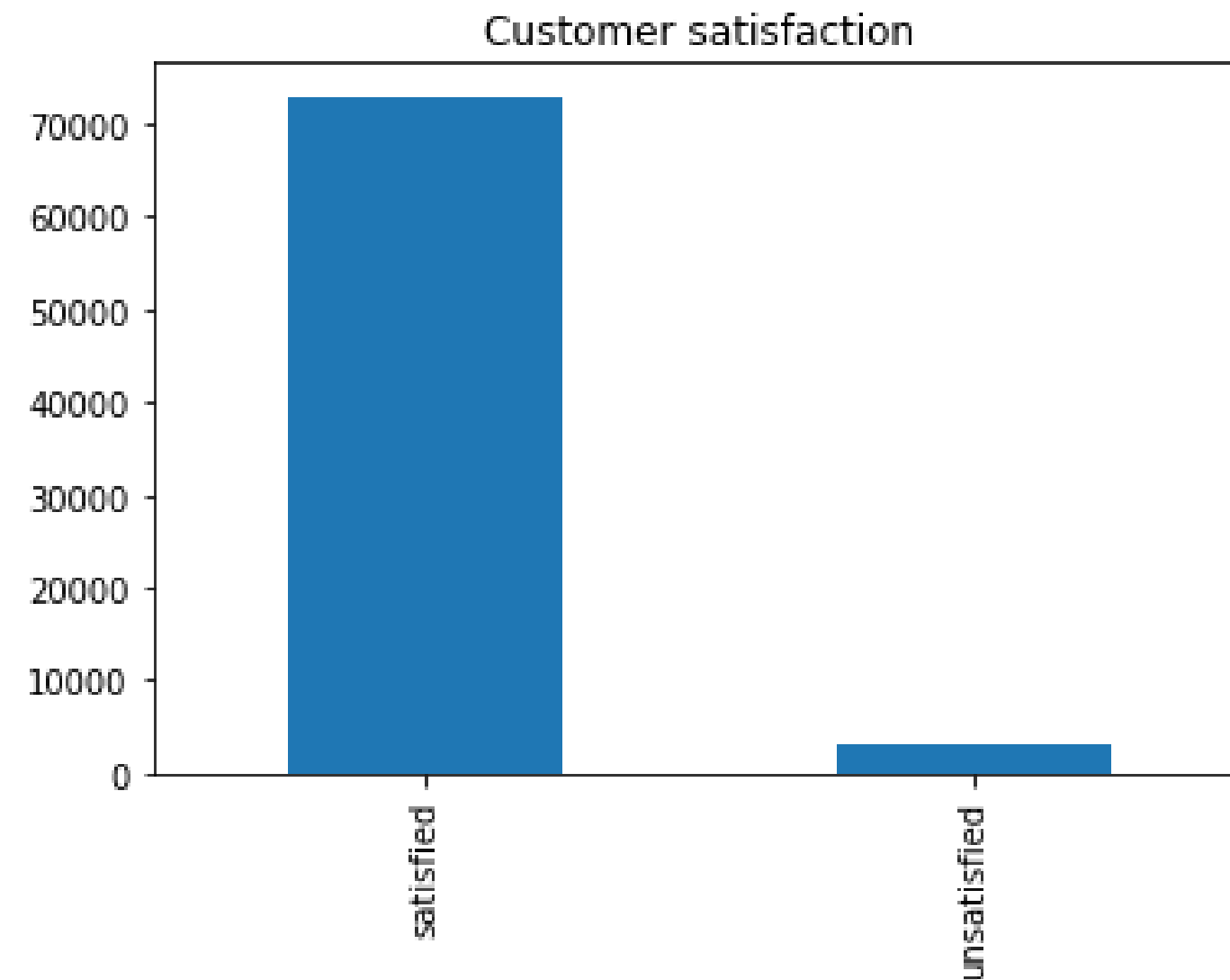
PCA



target unbalanced



4% unsatisfied customers



target resampling



undersampling

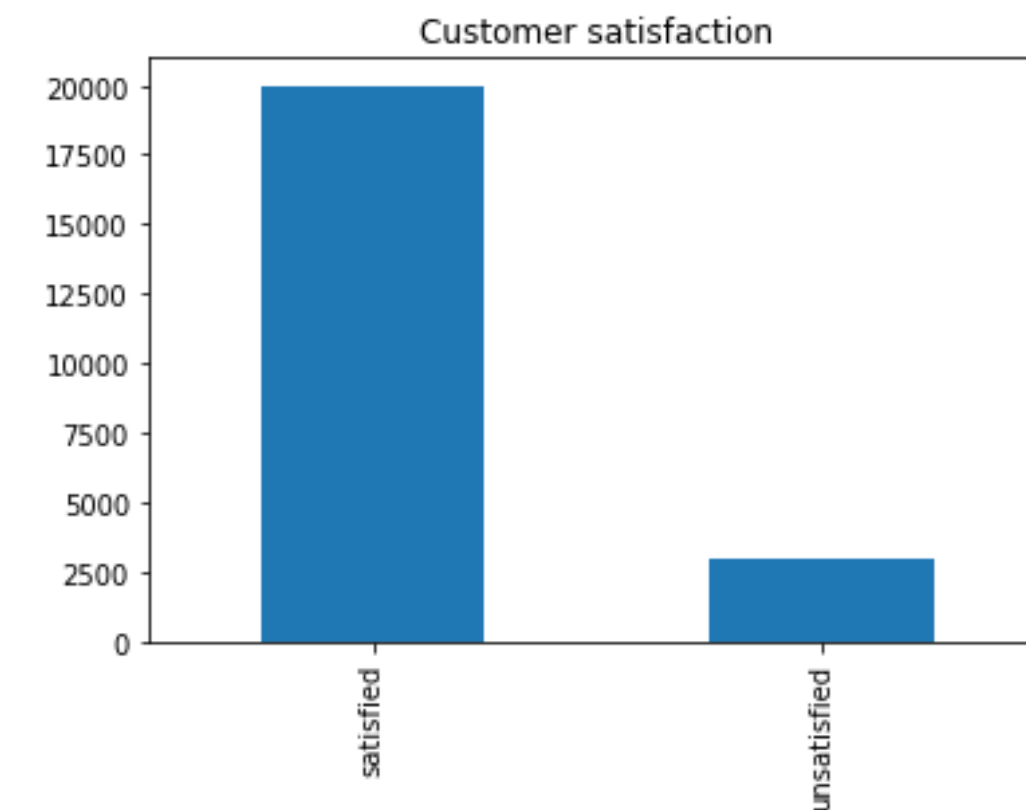
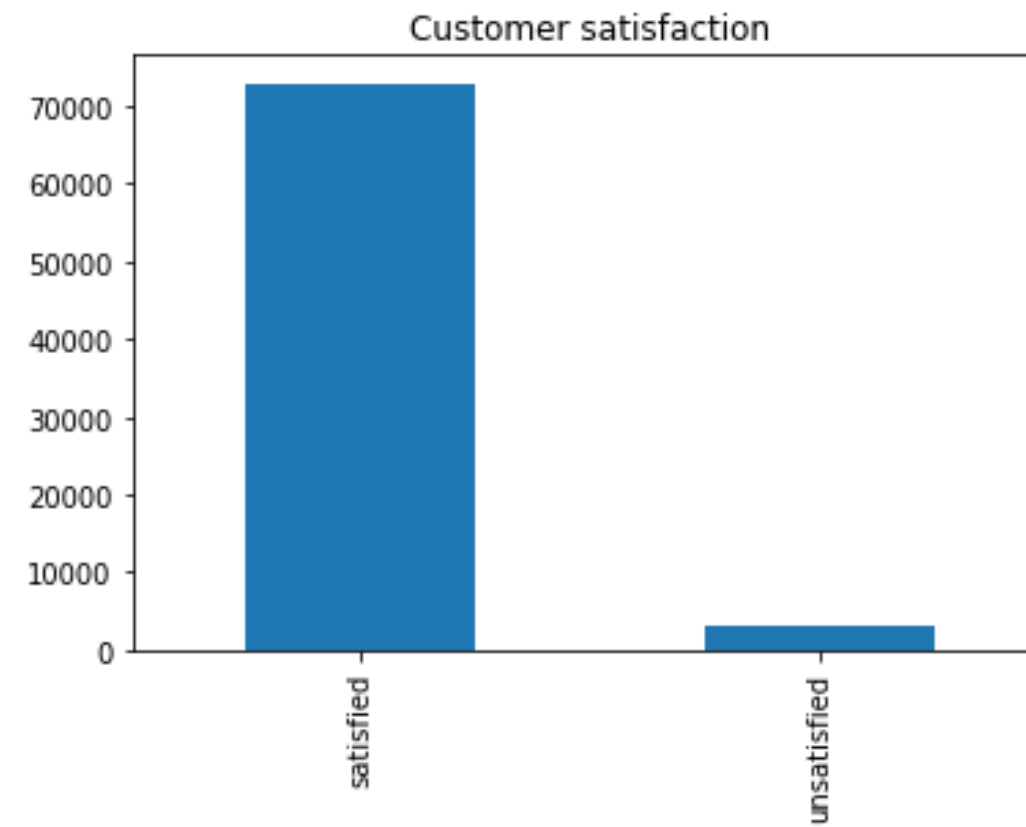
- Tomek links
- Cluster centroids



oversampling

- SMOTE

Random undersampling



random forest

feature importance



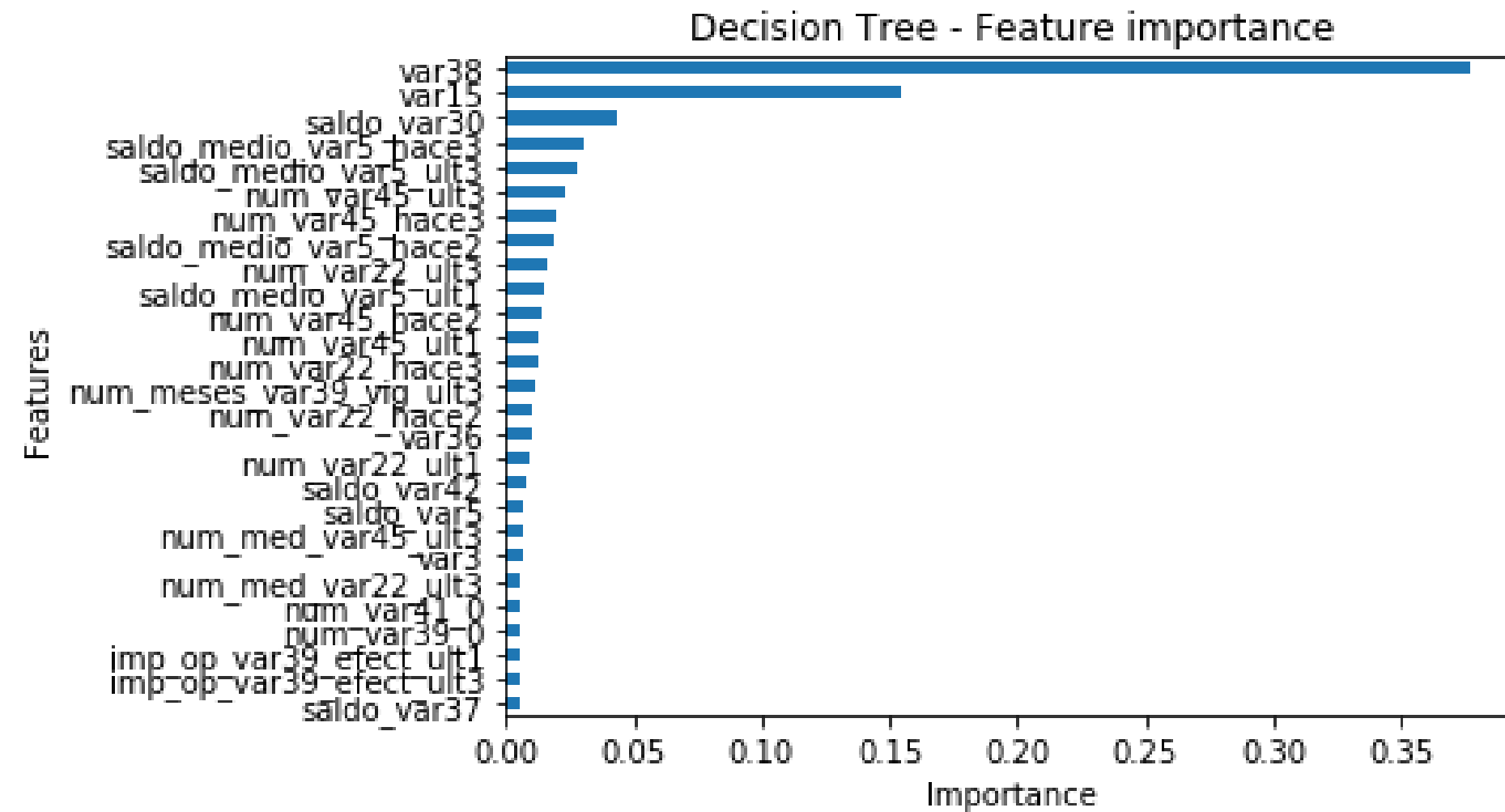
mortgage



age

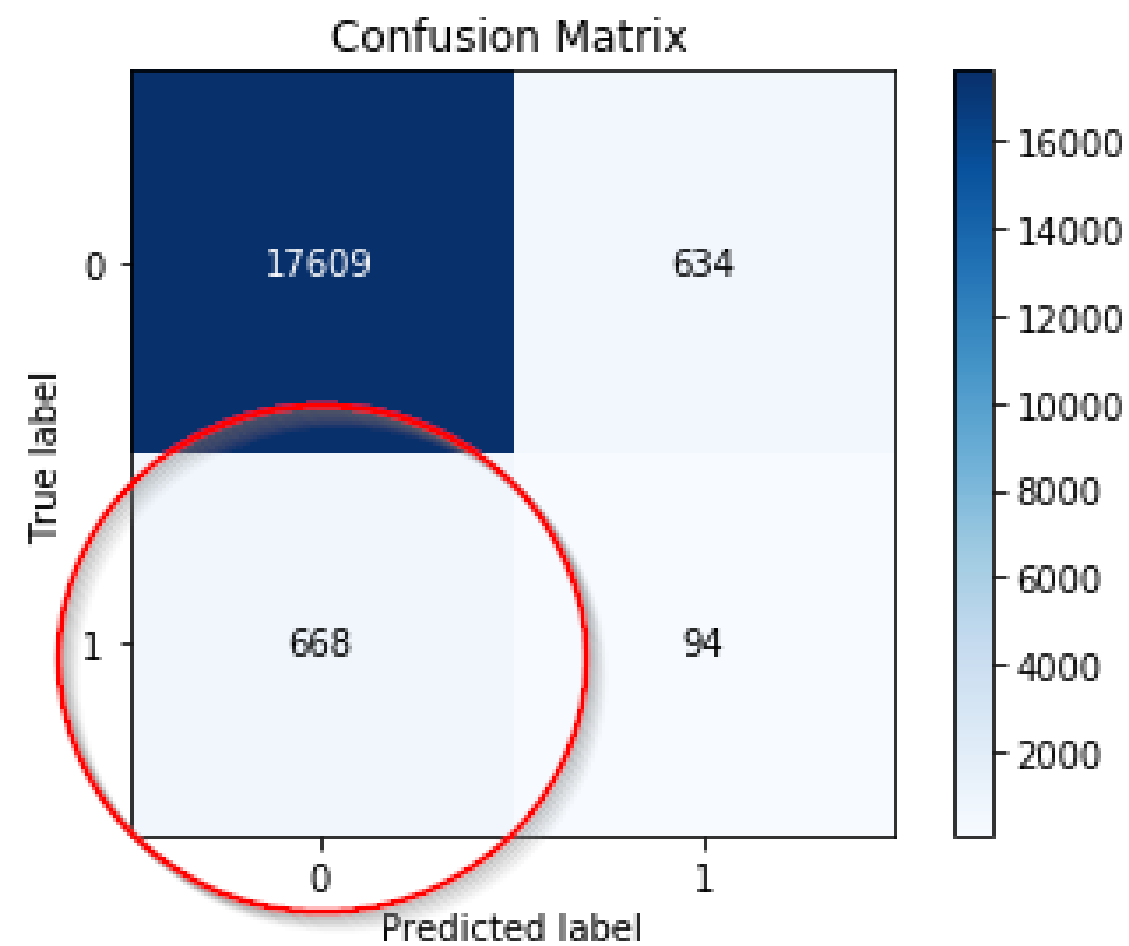


account balance



random forest

unbalanced dataset



	precision	recall	f1-score	support
0	0.96	0.97	0.96	18243
1	0.13	0.12	0.13	762
accuracy			0.93	19005
macro avg	0.55	0.54	0.55	19005
weighted avg	0.93	0.93	0.93	19005



random forest comparison

Model	data	accuracy	f1 avg	f1 weighted
Base Model (Decision Tree)	standarized	.93	.54	.93
Base Model (Decision Tree)	resampled	.81	.60	.81
Random Forest	resampled	.85	.62	.84
GridSearch Random Forest	resampled	.87	.60	.84
Random Forest	standard PCA	.95	.53	.94

XGBoost feature importance



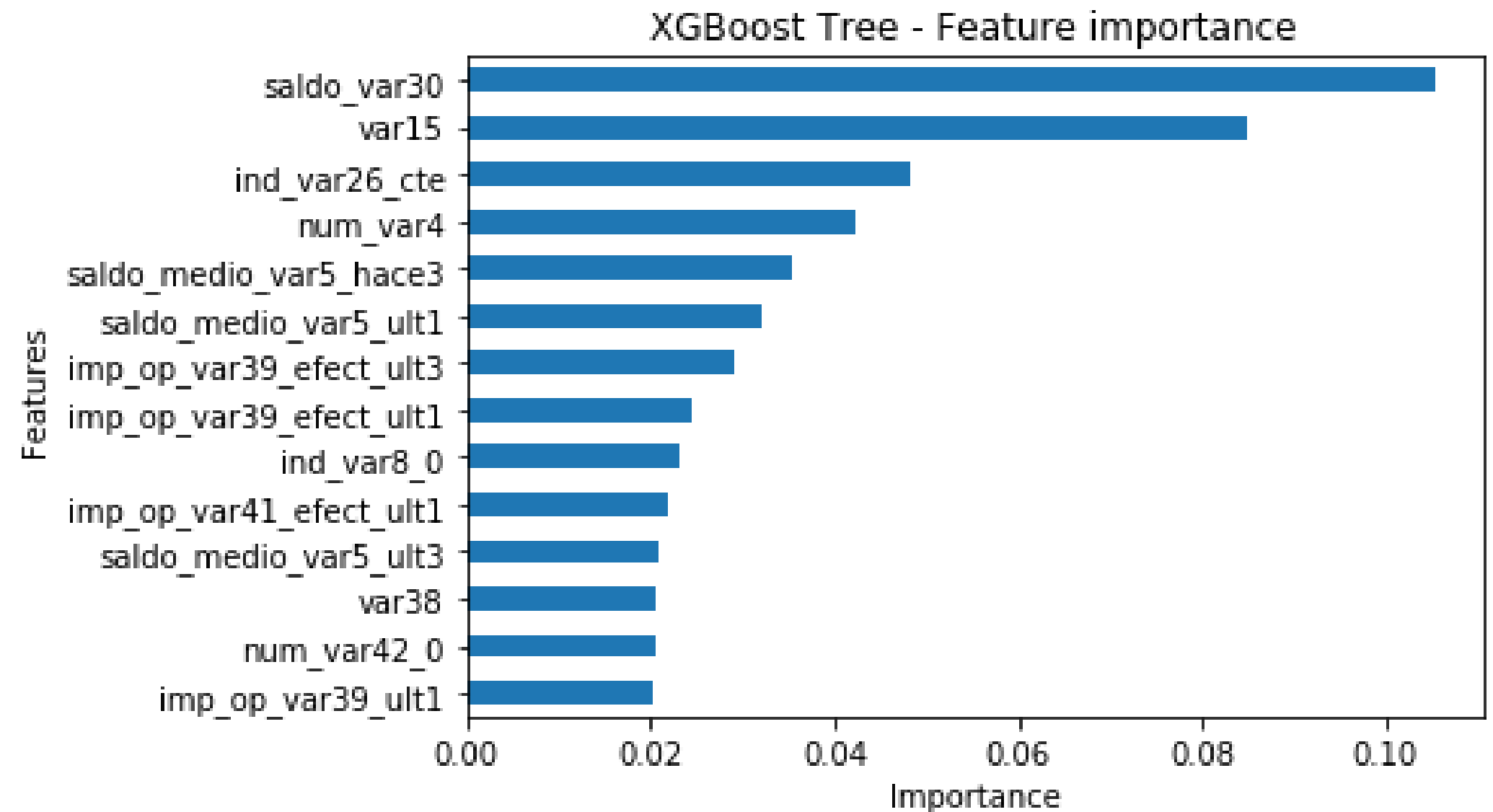
account balance



age



ind_var26_cte



96% Accuracy



conclusions

lessons learned



missing / incomplete data

difficult to interpret.



high dimensional data

computational power required.



Unbalanced datasets

sampling, hyperparameter tuning.



conclusions

future work



unbalanced data

Further work on the sampling / hyperparameter tuning.



additional ML algorithms

SVM, AdaBoost.



pipelines

Streamline the machine learning process.



「thank you.」

