

Credit Card Application Classifications

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Summary

Use classifier machine learning models to:

- Classify credit card applicants
- Speed up application approval/denial process
- Make Approval process easier to administrate



Business Problem

Managing credit card applications:

- Time consuming
- Expensive
- Requires manpower
- Difficult decisions

Machine learning models can:

- Speed up approval process
- Save banks money
- Reduce man hours required
- Guidelines for decisions

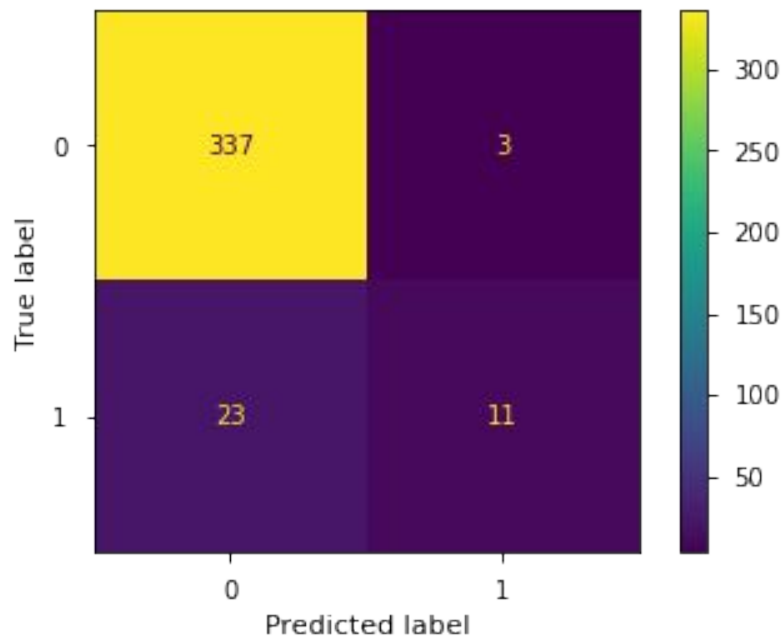




Data and Methodology

- Data from Kaggle, small dataset size
- Experiment with Synthetic Minority Oversampling (SMOTE)
- Experimented exhaustively with parameters and model types
- Eliminate correlated variables

Best Model



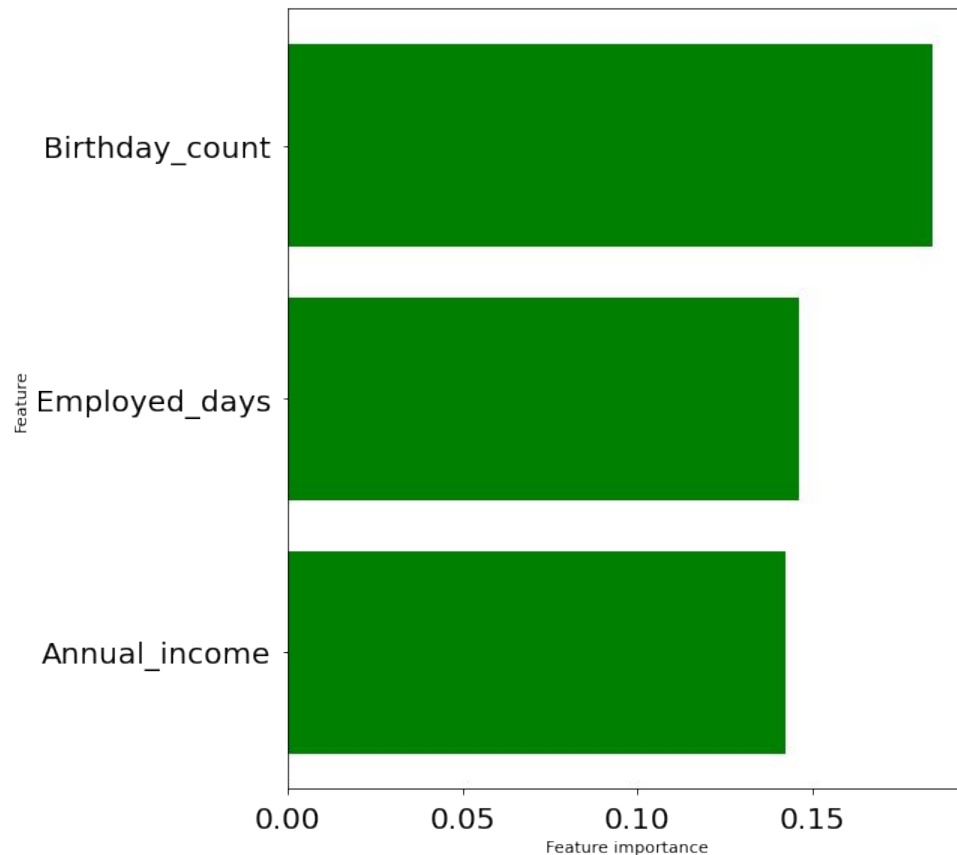
- Random Forest Classifier
- Minimize False positives, Maximize True positives
- False Negatives are acceptable
- Precision score of 0.785 (ratio of true positive to all positives)



Analysis

Most important predictors:

- Applicant's age
 - Annual income
 - # of days in current employment
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- New goal: Establish rough thresholds for these three predictors



Thresholds

- On average, model approves 33 years old or older
- \$165,000/yr on average
- 3000 days in current employment on average



Photo by Mikhail Nilov:
<https://www.pexels.com/photo/a-bearded-man-drinking-coffee-6972768/>



Recommendations:

- Consider model output **in combination** with thresholds
- Build **marketing profiles** around average approved/denied application
- Market **additional financial products** to approved/denied applications



Conclusion

- Consider fast tracking applicants who make \$165,000 or more, are 33 years of age, and have had their current job for 8+ years.
- Consider automatically declining applicants who are below thresholds.
- Use classifier as a pre-screening. Re-analyze declined applicants above these thresholds.



Thank you for your time!