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
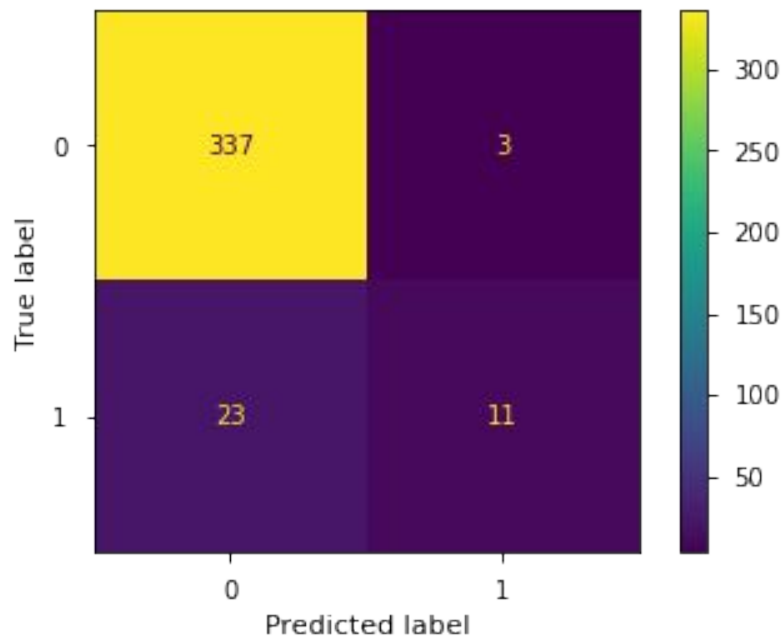- Reduce man hours required
- Guidelines for decisions

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

- New goal: Establish rough thresholds for these three predictors
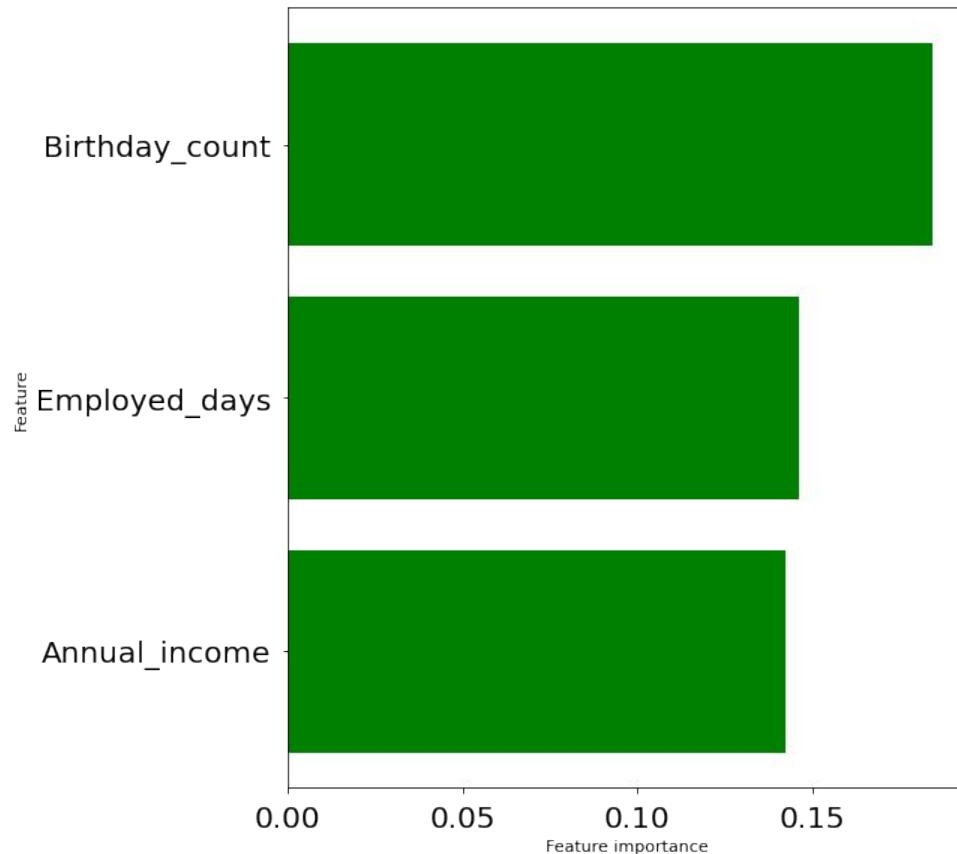
Age of Applicant

- On average, model approves 33 years old or older
- Extra consideration for those above
- Stricter guidelines for those below

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

Annual Income

- Approved $165,000/yr on average
- High income = expedite approval
- Heavy scrutiny on applicants below threshold

Photo by Ron Lach : https://www.pexels.com/photo/pile-of-us-dollars-and-gold-necklaces-8715791/

Number of Days in Current Job

- 3000 days in current employment on average
- Roughly 8 years
- Look for consistent employment

Photo by Leeloo Thefirst: https://www.pexels.com/photo/brown-framed-eyeglasses-on-a-calendar-5386754/

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!