FLATIRON SCHOOL

Kickstarter Success Predictor

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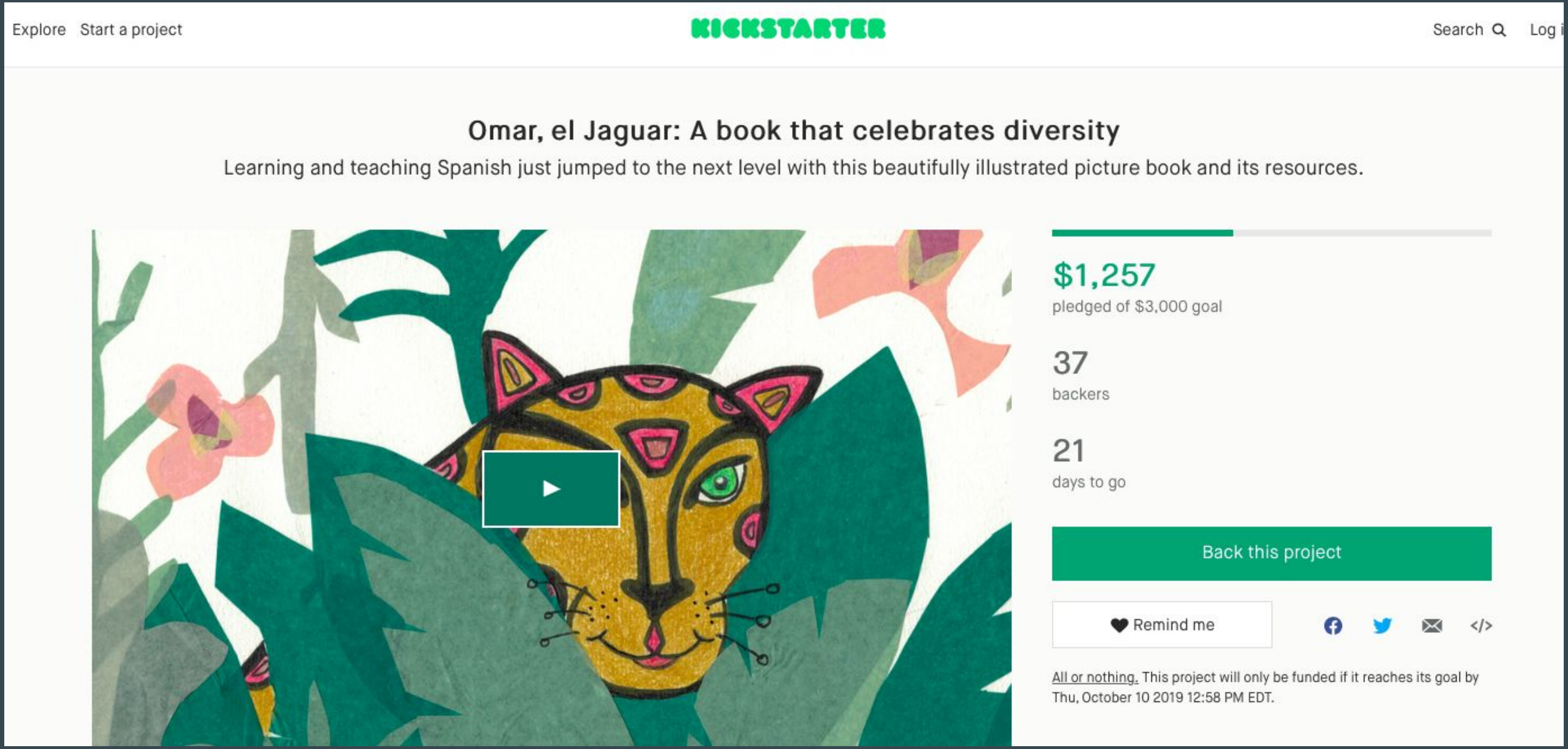
Omar Qusous

What can you do to increase the project’s chances of success?



Omar, el Jaguar: A book that celebrates diversity

Learning and teaching Spanish just jumped to the next level with this beautifully illustrated picture book and its resources.

$1,257
pledged of $3,000 goal

37
backers

21
days to go

All or nothing. This project will only be funded if it reaches its goal by Thu, October 10 2019 12:58 PM EDT.

Data Source 1

- https://webrobots.io/kickstarter-datasets/
- Total of 9338 points. Aim to keep 5000 or more (duplicates, Nans, etc...)

Data Source 2

Key:

All NAN: 🟥

Repeated information: 🟪

Data leakage: 🟨

Not useful (logic): 🟦

Feature Selection:

['backers_count' 🟨, 'blurb' 🟪, 'category', 'converted_pledged_amount' 🟨, 'country' 🟪, 'created_at', 'creator' 🟦, 'currency' 🟦, 'currency_symbol' 🟪, 'currency_trailing_code' 🟪, 'current_currency' 🟦, 'deadline', ‘‘disable_communication' 🟦, 'friends' 🟥, 'fx_rate' 🟦, 'goal', 'id' 🟦, 'is_backing' 🟥, 'is_starrable' 🟥, 'is_starred' 🟦, 'launched_at' 🟪, 'location', 'name', 'permissions' 🟥, 'photo' 🟦, 'pledged' 🟨, 'profile' 🟦, 'slug' 🟪, 'source_url' 🟪, 'spotlight' 🟨, 'staff_pick', 'state', 'state_changed_at' 🟨, 'static_usd_rate' 🟪, 'urls' 🟦, 'usd_pledged' 🟪, 'usd_type' 🟦])

Final Features:

- category: Film, Music, Fashion etc..
- location: country and state converted to continents to balance data
- created_at: data of starting the campaign
- deadline: deadline set for achieving the desired amount of money
- name: projects name
- staff_pick: projects highlighted on homepage
- goal: desired amount of money to succeed

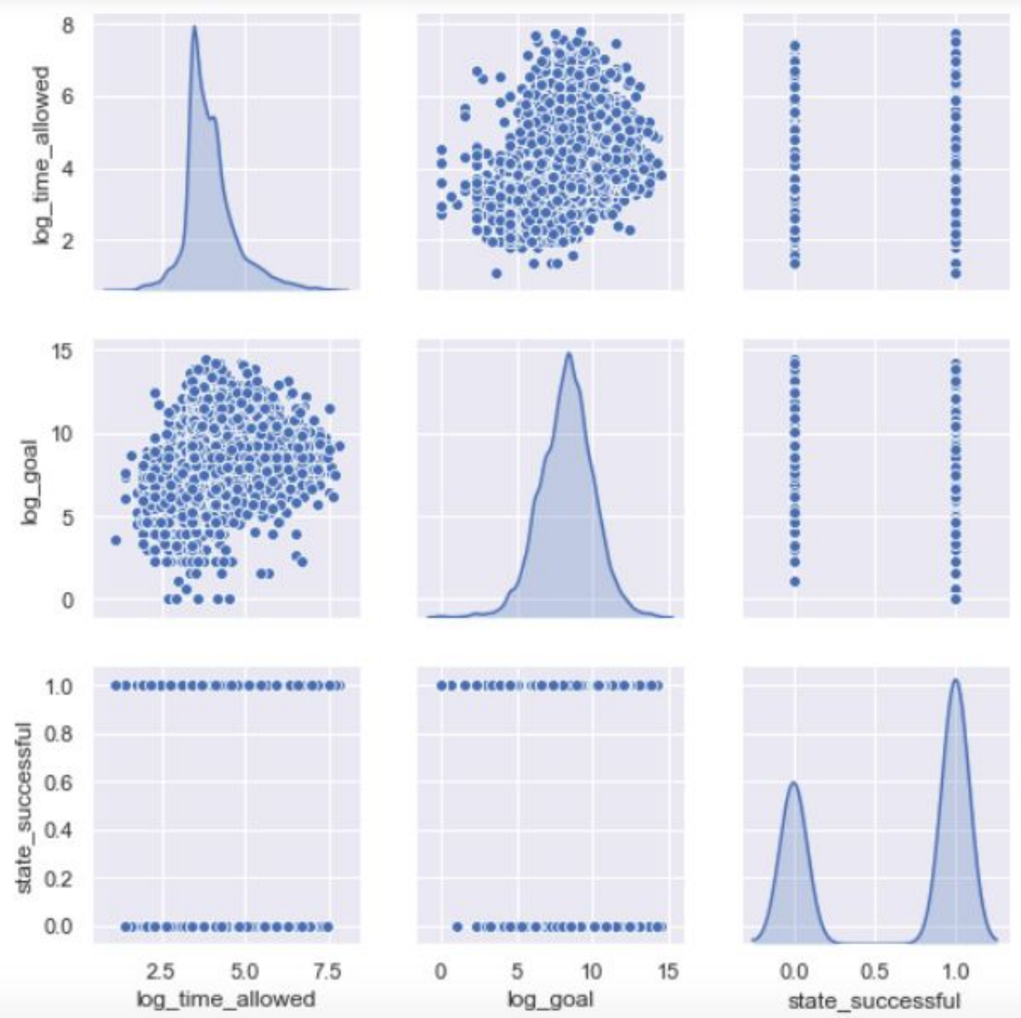
EDA and Feature Engineering 1

- Continuous Data:
    - Log(df['time_allowed']) and Log(df['goal'])
        - df['time_allowed'] = df['deadline']-df['created_at'] # in days
        - outliers = df[(df['time_allowed'] > 5000) & (df['goal'] > 2e6)]

- Categorical Data:
    - Converted to dummies
    - df[['category', 'staff_pick', 'country']]

- Total of 168 columns in X

EDA and Feature Engineering 2



Target

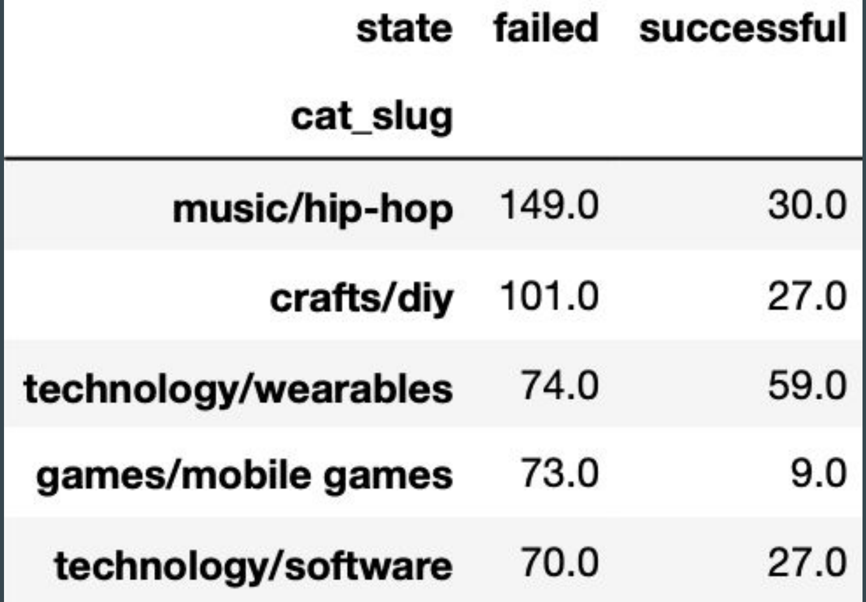
Target:

- ‘State’ : successful, failed, suspended, live, cancelled
    - Eliminated live, cancelled and suspended

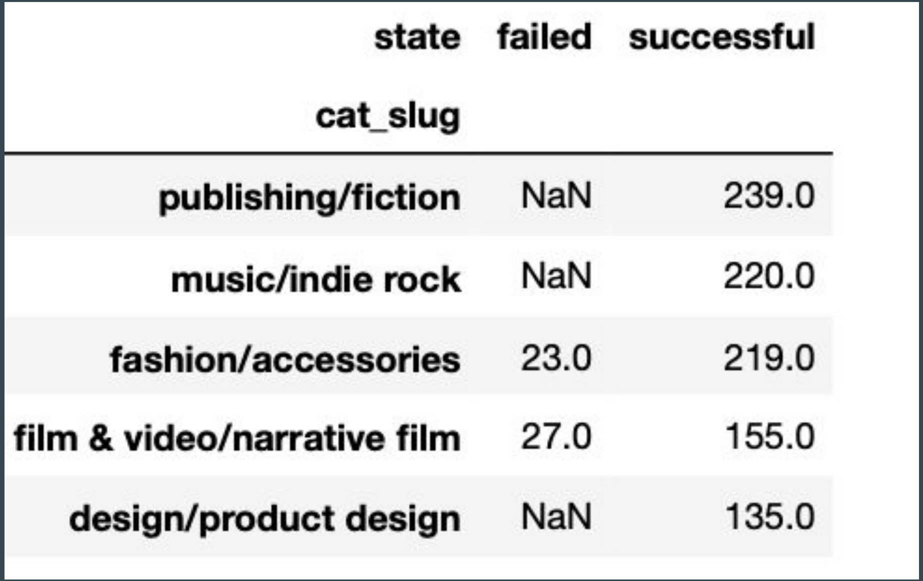
- ‘Binary distribution (1: success, 0: failure)

Quick Interesting Stats 1

Most successful and unsuccessful project categories



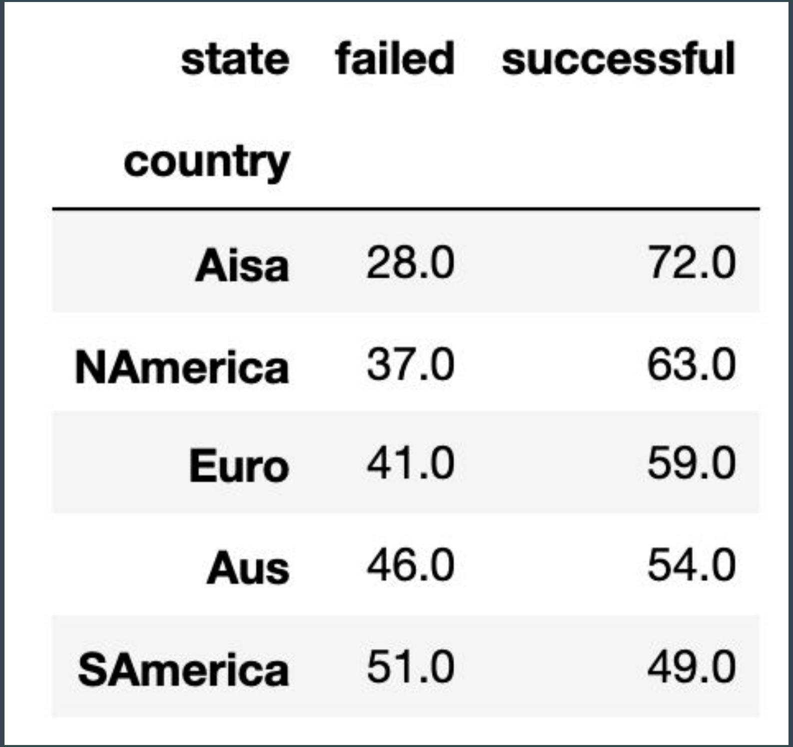
state	failed	successful
cat_slug		
music/hip-hop	149.0	30.0
crafts/diy	101.0	27.0
technology/wearables	74.0	59.0
games/mobile games	73.0	9.0
technology/software	70.0	27.0



state	failed	successful
cat_slug		
publishing/fiction	NaN	239.0
music/indie rock	NaN	220.0
fashion/accessories	23.0	219.0
film & video/narrative film	27.0	155.0
design/product design	NaN	135.0

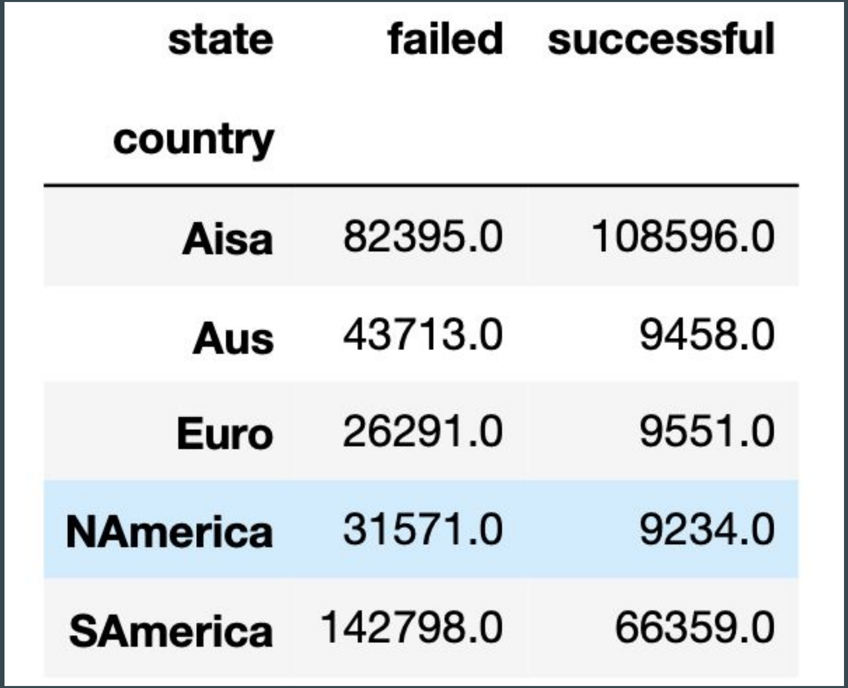
Quick Interesting Stats 2

Percentage Success/Failure by Continent



state	failed	successful
country		
Aisa	28.0	72.0
NAmerica	37.0	63.0
Euro	41.0	59.0
Aus	46.0	54.0
SAmerica	51.0	49.0

Average ‘Goal’ for successful and failed projects



state	failed	successful
country		
Aisa	82395.0	108596.0
Aus	43713.0	9458.0
Euro	26291.0	9551.0
NAmerica	31571.0	9234.0
SAmerica	142798.0	66359.0

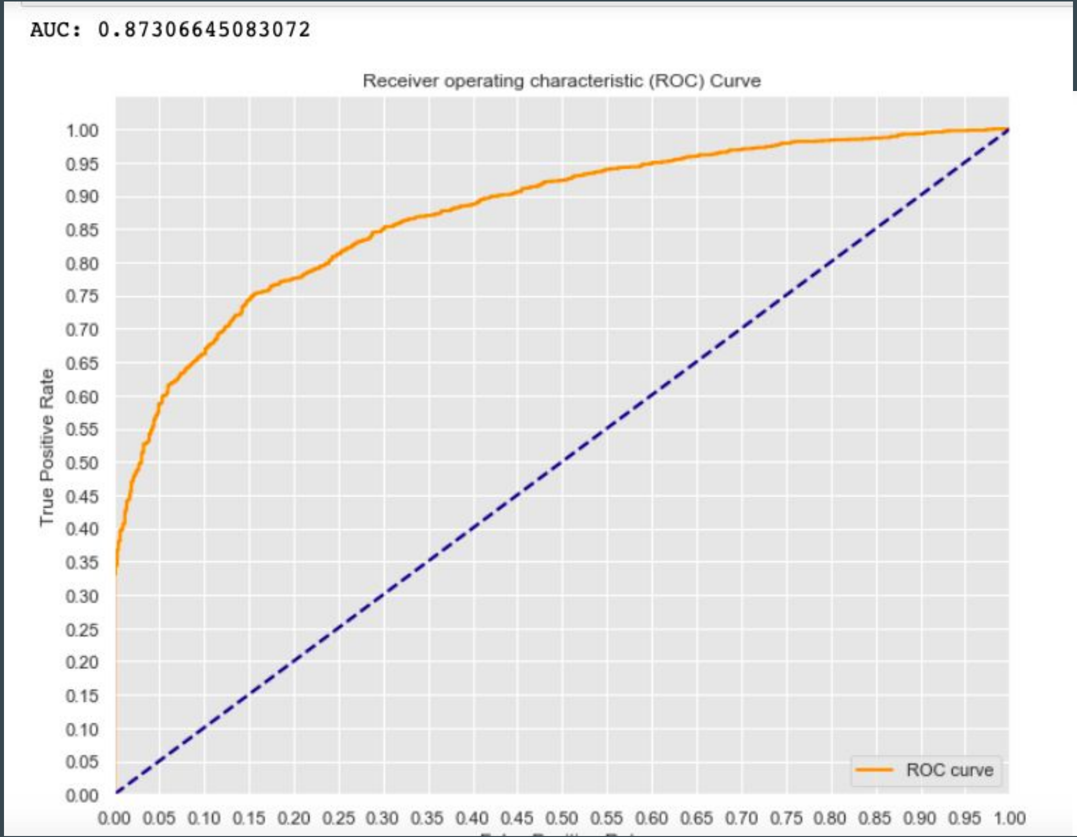
Models 1

Ran Three Models:

- Baseline model of dummyclassifier used which gave 63% accuracy
- Random Forest with hyperparameter tuning using iterations and AUC vs Parameter range plots
- Logistic Regression with hyperparameter tuning in solver type, C parameter and penalty
- XGBoost with and without Gridsearch.
- All models were validated first with training data and then tested with the testing data.

Models 2 - Final Model

Logistic Regression with l1 penalty, bilinear solver gave the best results



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AUC: 0.87306645083072
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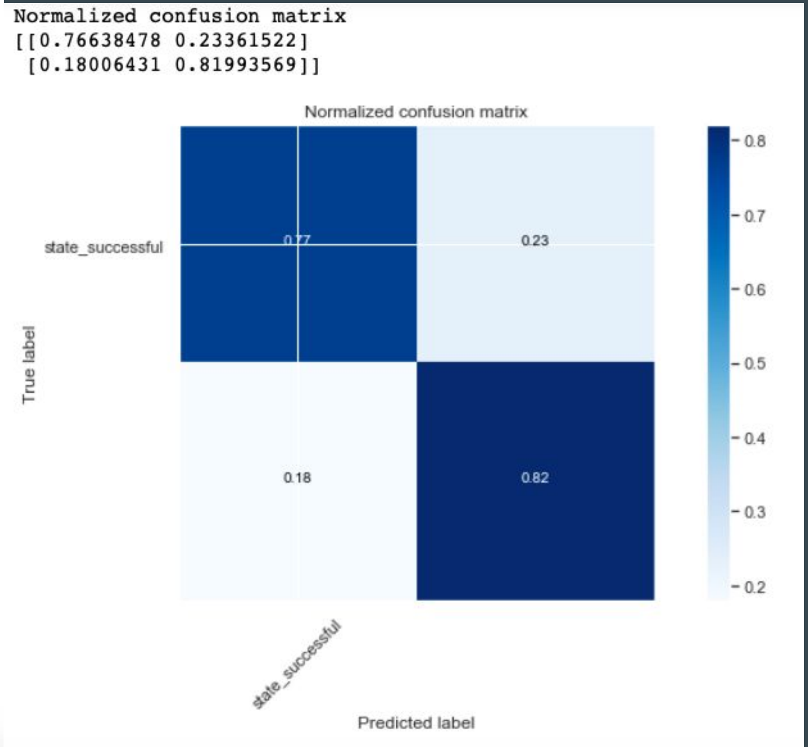

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Normalized confusion matrix
[[0.76638478 0.23361522]
 [0.18006431 0.81993569]]
```

Models 3 - Comparisons

Model	Confusion Matrix TN, FP, FN, TN	Accuracy	Reccall	Precision	F1
Random Forest Tuned	[[681 265] [314 1241]]	77.2%	85.9%	79.5%	82.6%
LogReg	[[712 234] [277 1278]]	79.6%	82.2%	84.5%	83.3%
LogReg Tuned	[[725 221] [280 1275]]	80.0%	82.0%	85.2%	83.6%
XGBoost with GridSearch	[[593 353] [187 1368]]	78.4%	88.0%	79.5%	83.5%

Models 4 - Improvements

- Quantify quality of the project's presentation through recognising the use of videos, images and rewards.

- Monitor updates from project founders and number of backers/amount of pledges for first 10-20 days and quantify it as a feature.

- Work on better classifying project categories and make them more uniform

Thank you