AirBnB Destinations

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Outline

- ☐ AirBnB Kaggle Challenge Overview
- ☐ Data & Class Imbalance
- ☐ Previous Work & Evaluation Criteria
- ☐ My Results
- ☐ Model selection, how I got my results
- ☐ Conclusions and Next steps

“Sometimes it's the journey that teaches you a lot about your destination.

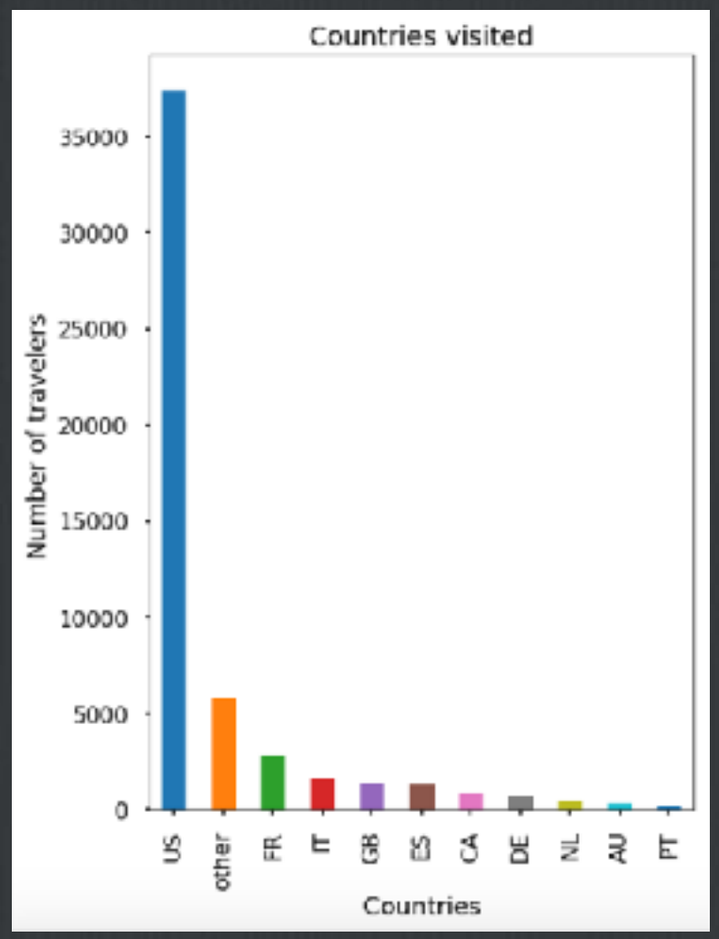
–Drake

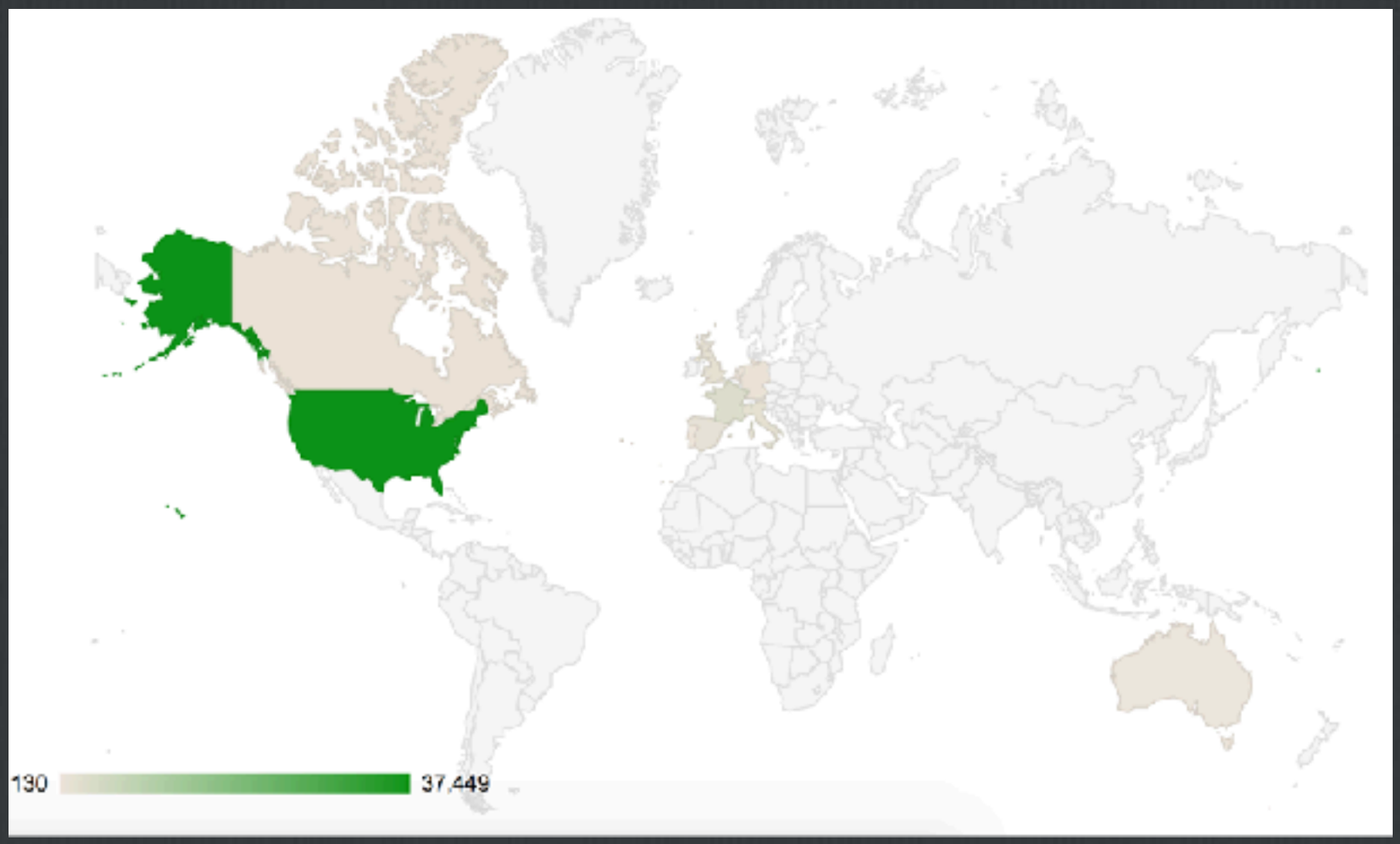
kaggle

AirBnB Destinations

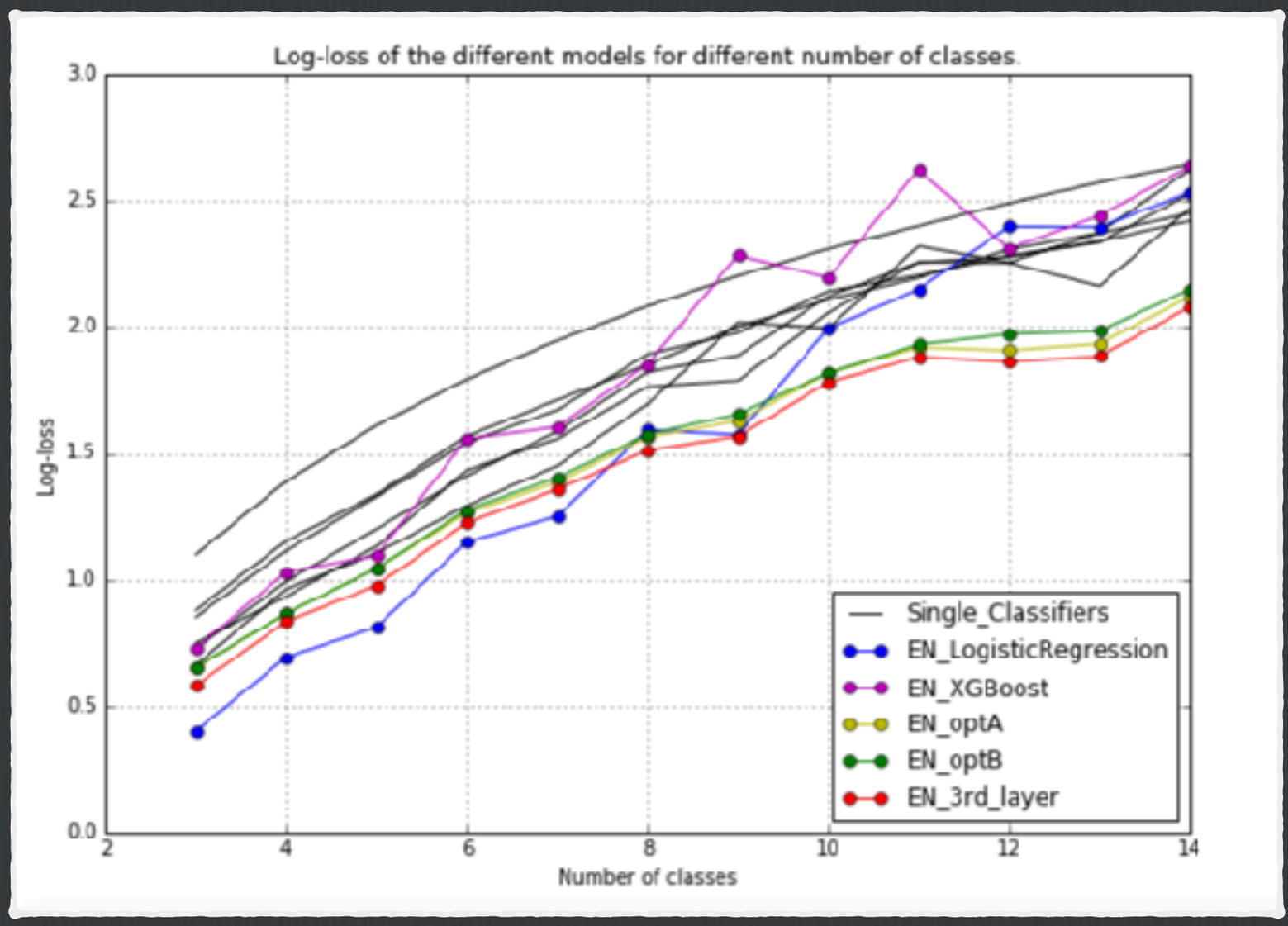
- Kaggle Challenge from 2015
- Goal: Predict the first travel destination of new US-based user
- Basic profile info, web session meta-data, additional facts and stats about demographics and countries

Training Data & Class Imbalance





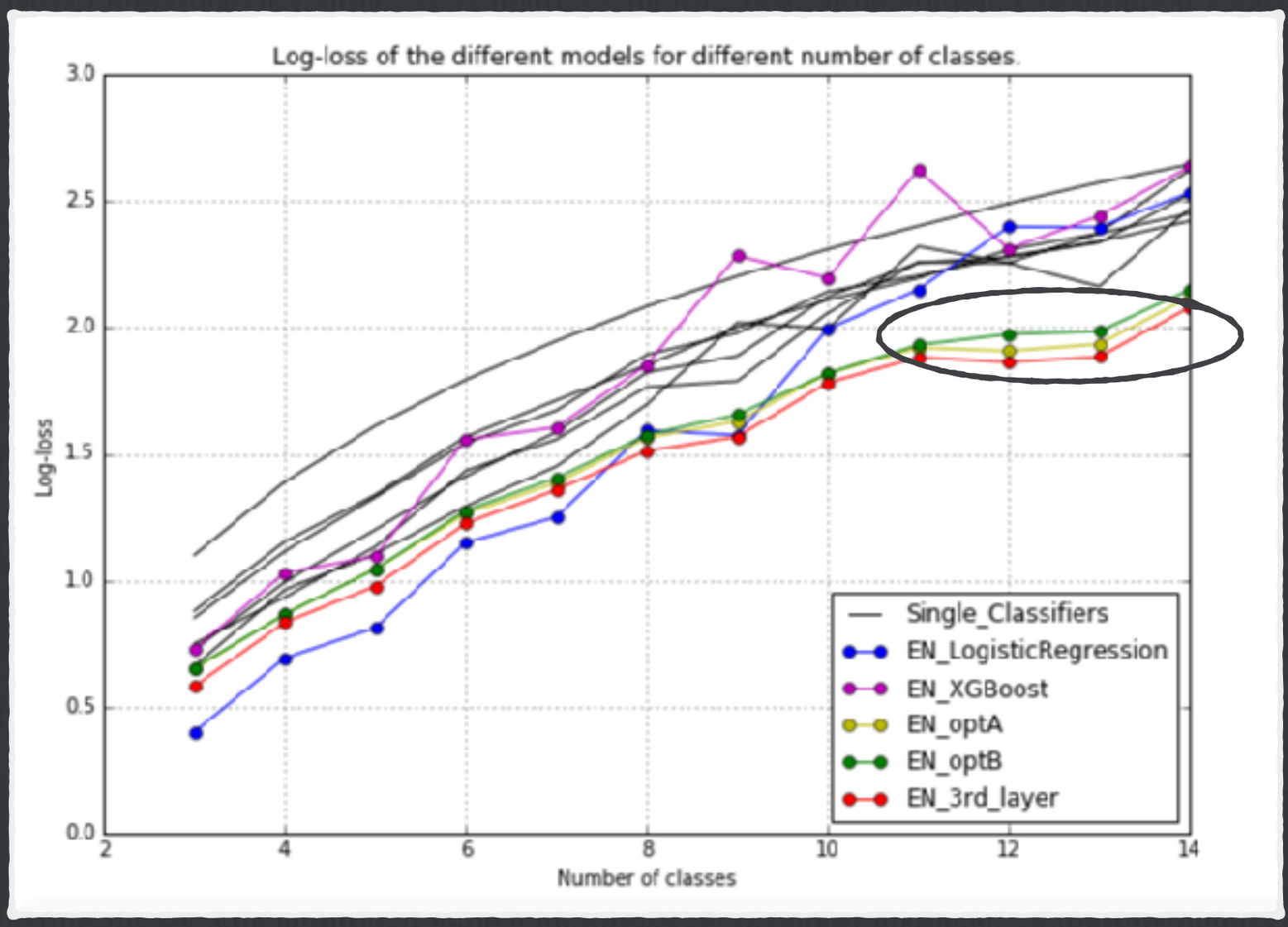
Previous Work & Metric



Sandro

- ☐ Key Metric is Log-Loss
- ☐ Lower Log-Loss is better
- ☐ Log-loss near 2.0 won

Previous Work & Metric



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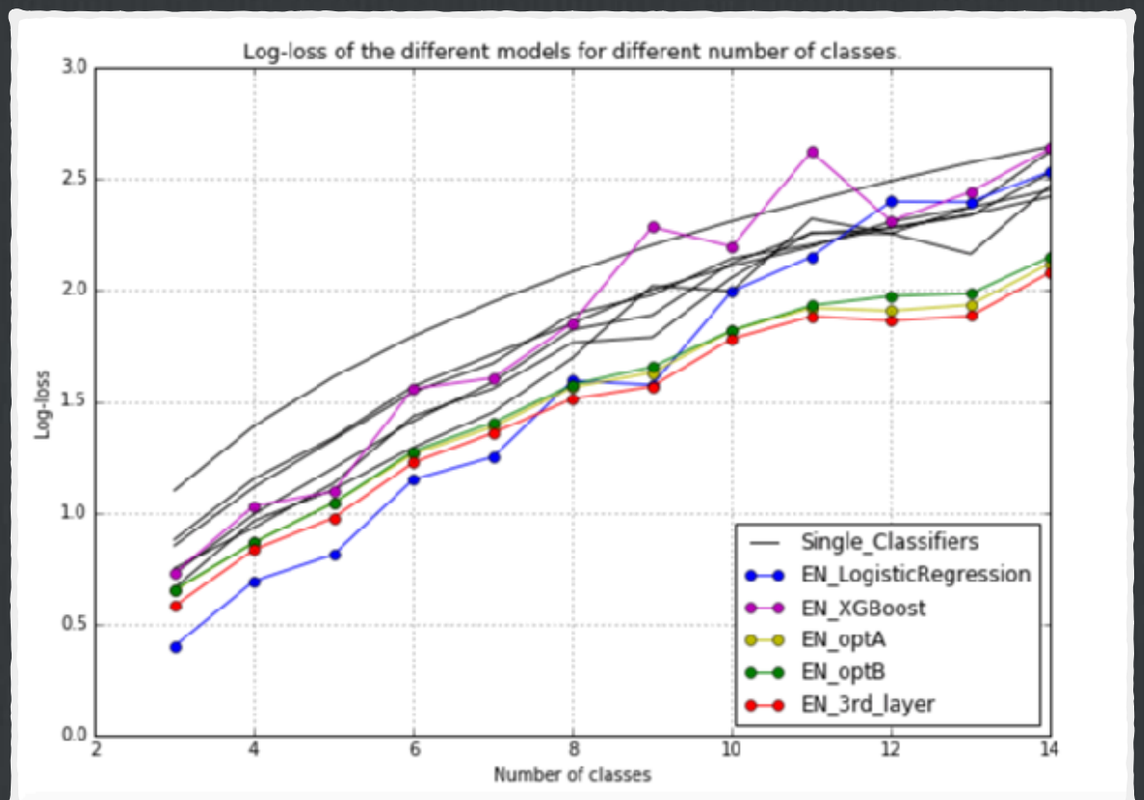
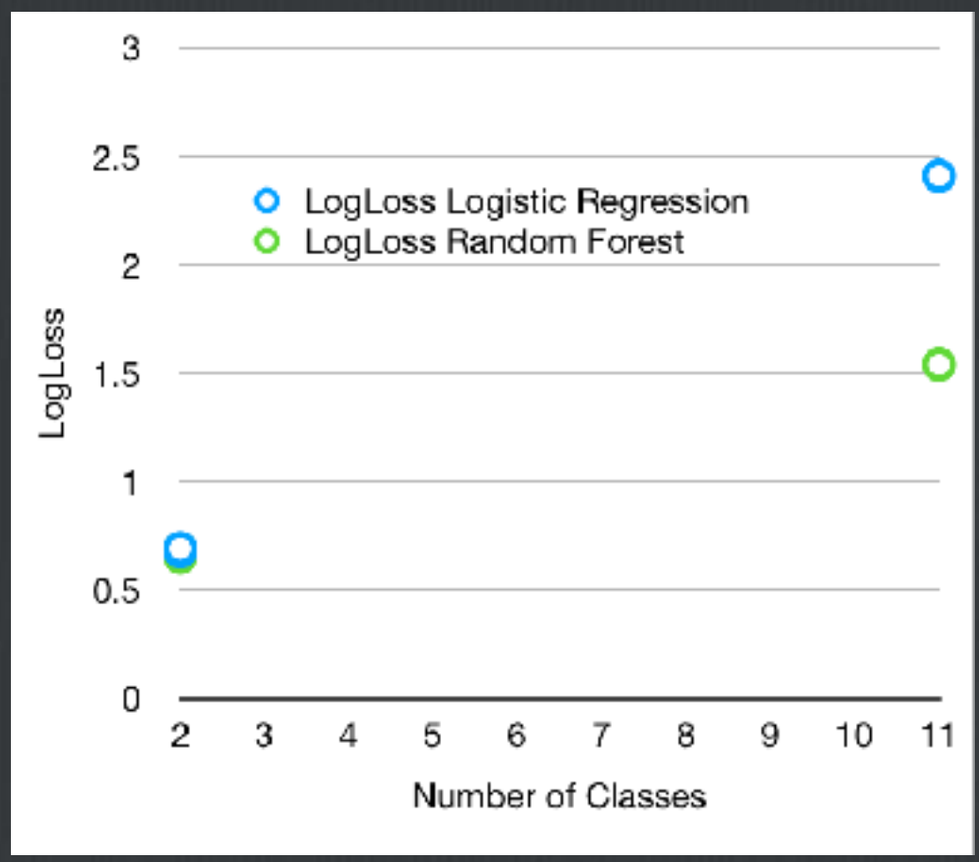
Previous Work vs My Results

Kaggle 3rd place



My results



Previous Work vs My Results

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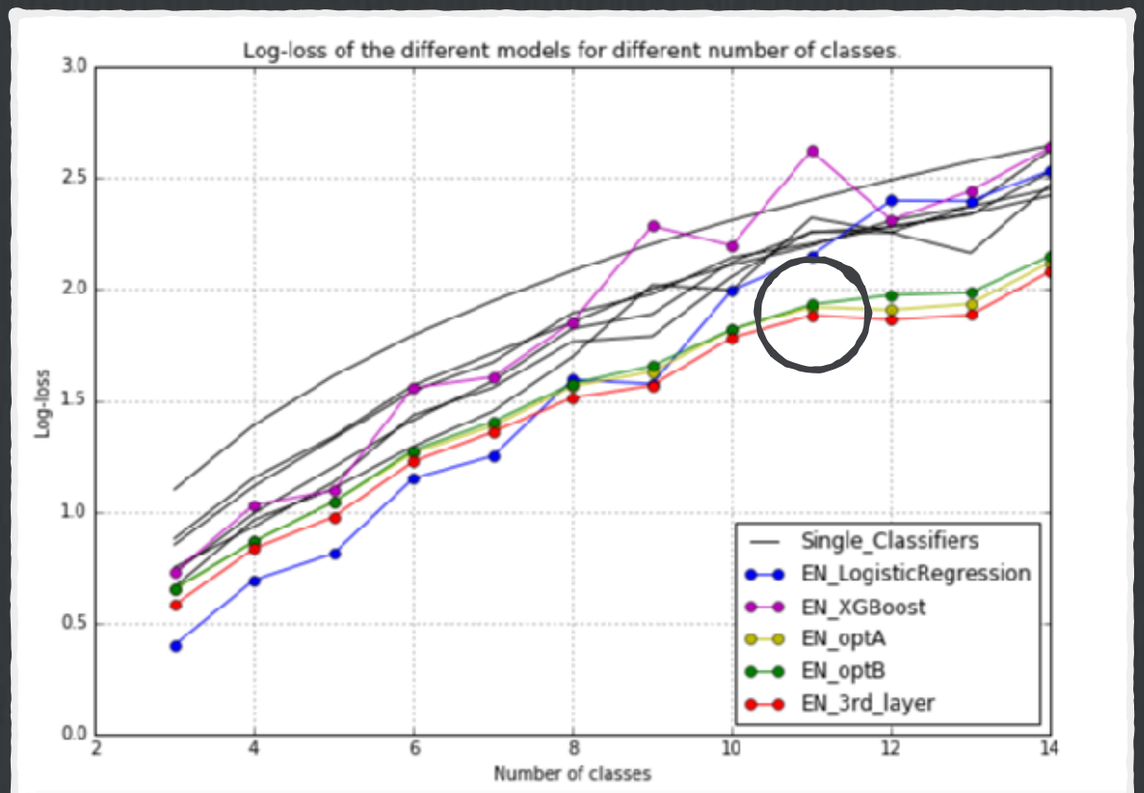
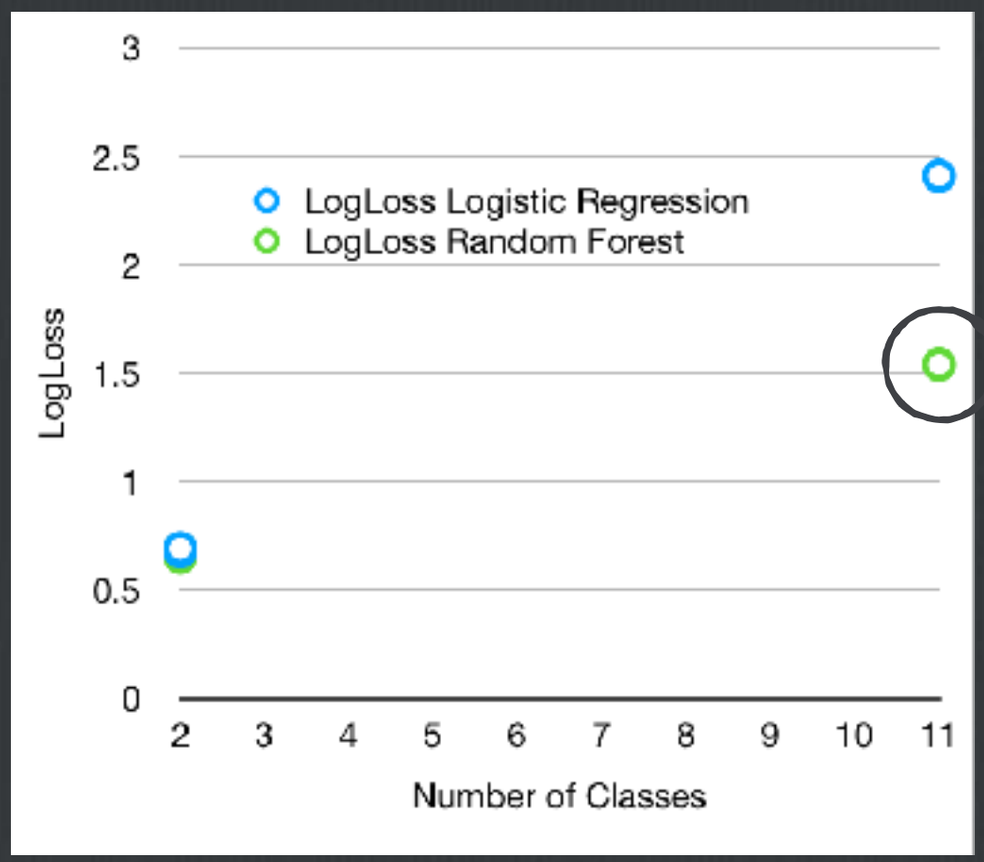


My results



Results: Major class USA

Country	precision	recall	f1-score	support
0	0.03	0.01	0.02	87
1	0.02	0.01	0.01	162
2	0.02	0.01	0.01	131
3	0.04	0.02	0.02	279
4	0.09	0.04	0.05	584
5	0.04	0.01	0.02	313
6	0.02	0.01	0.01	344
7	0.00	0.00	0.00	104
8	0.00	0.00	0.00	28
USA 9	0.71	0.90	0.79	7661
10	0.12	0.04	0.06	1209
avg / total	0.52	0.64	0.57	10902

Results: Minor Class France

Country	precision	recall	f1-score	support
0	0.03	0.01	0.02	87
1	0.02	0.01	0.01	162
2	0.02	0.01	0.01	131
3	0.04	0.02	0.02	279
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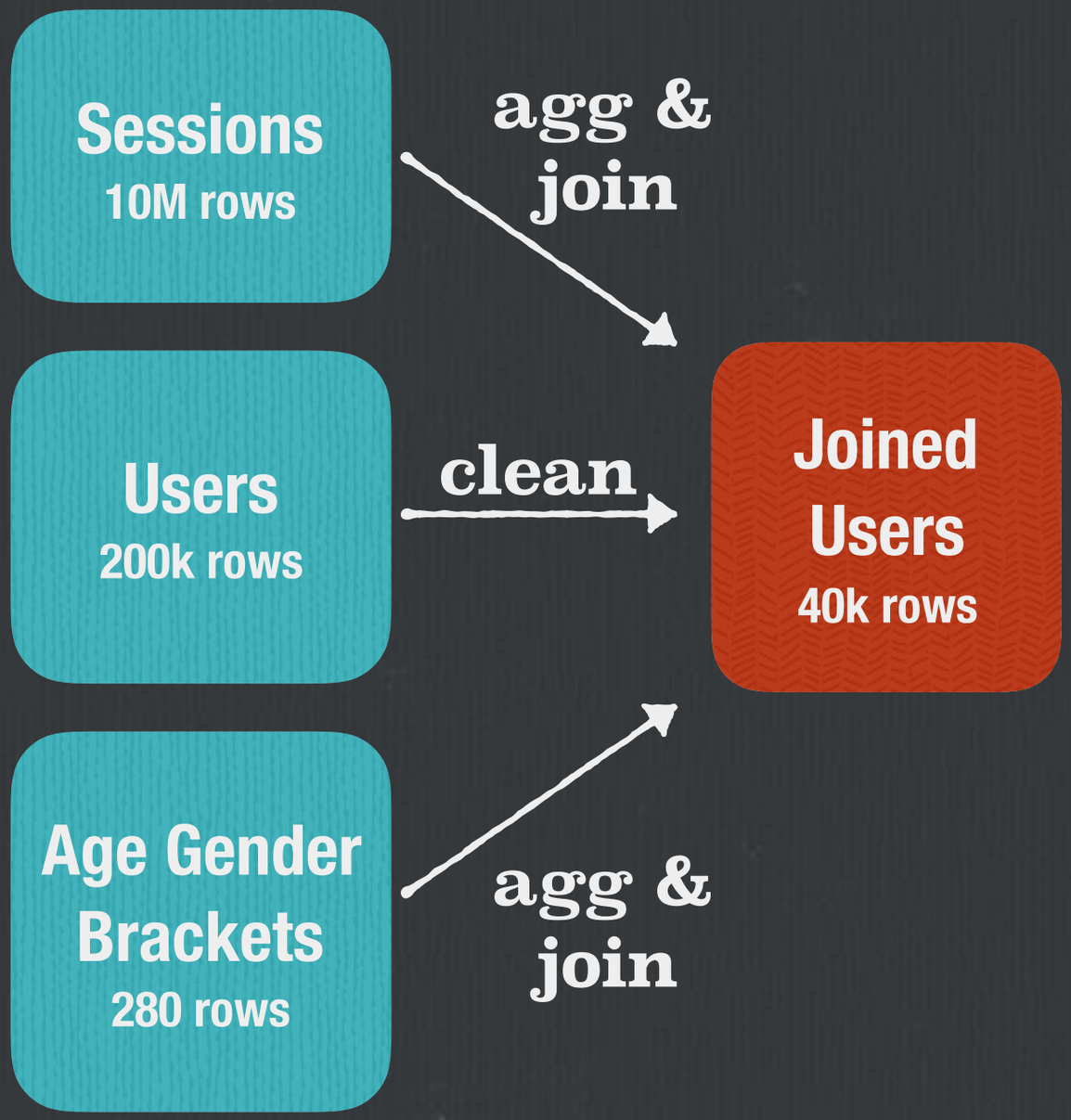
France

ETL and Feature Engineering



odel
lection

Joined_Users

Train Val Holdout Split → Holdout

Train

Validation

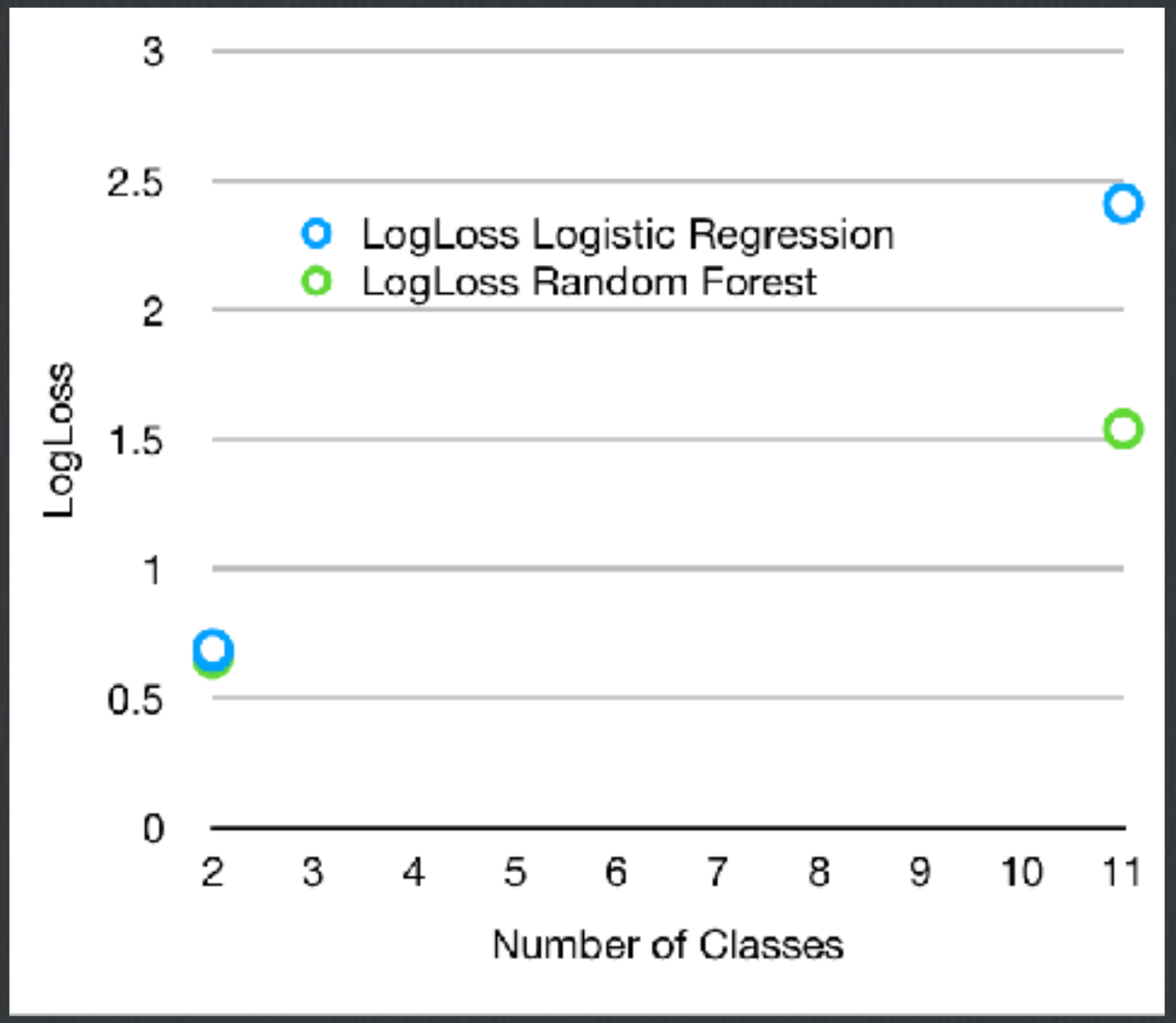
Transform, Binarized or Multilabel Subset

USA vs France
USA vs rest
Multilabel

SMOTE

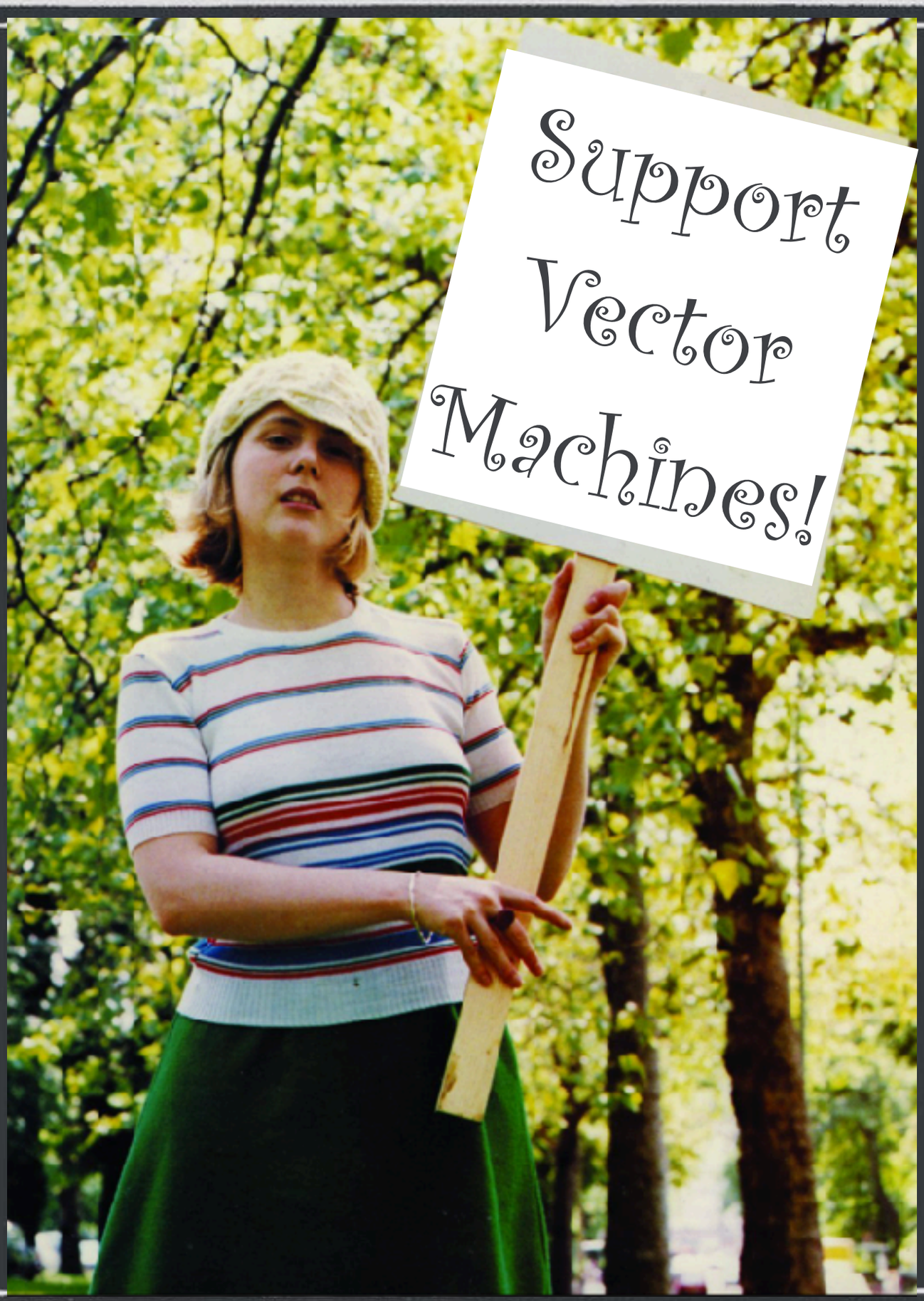
RandomizedSearchCV
- LogisticRegression
- RandomForest

Previous Work vs My Results



Conclusions and next steps

- ☐ AirBnB Data set provides low-grade information
- ☐ Ballpark of Kaggle 3rd Place Performance with simplified data set
- ☐ Next:
  - ☐ More models (XGBoost, SVM)
  - ☐ More data complexity
  - ☐ Understand Ensembling


Support
Vector
Machines!

Results: Major class USA

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USA 9	0.71	0.90	0.79	7661
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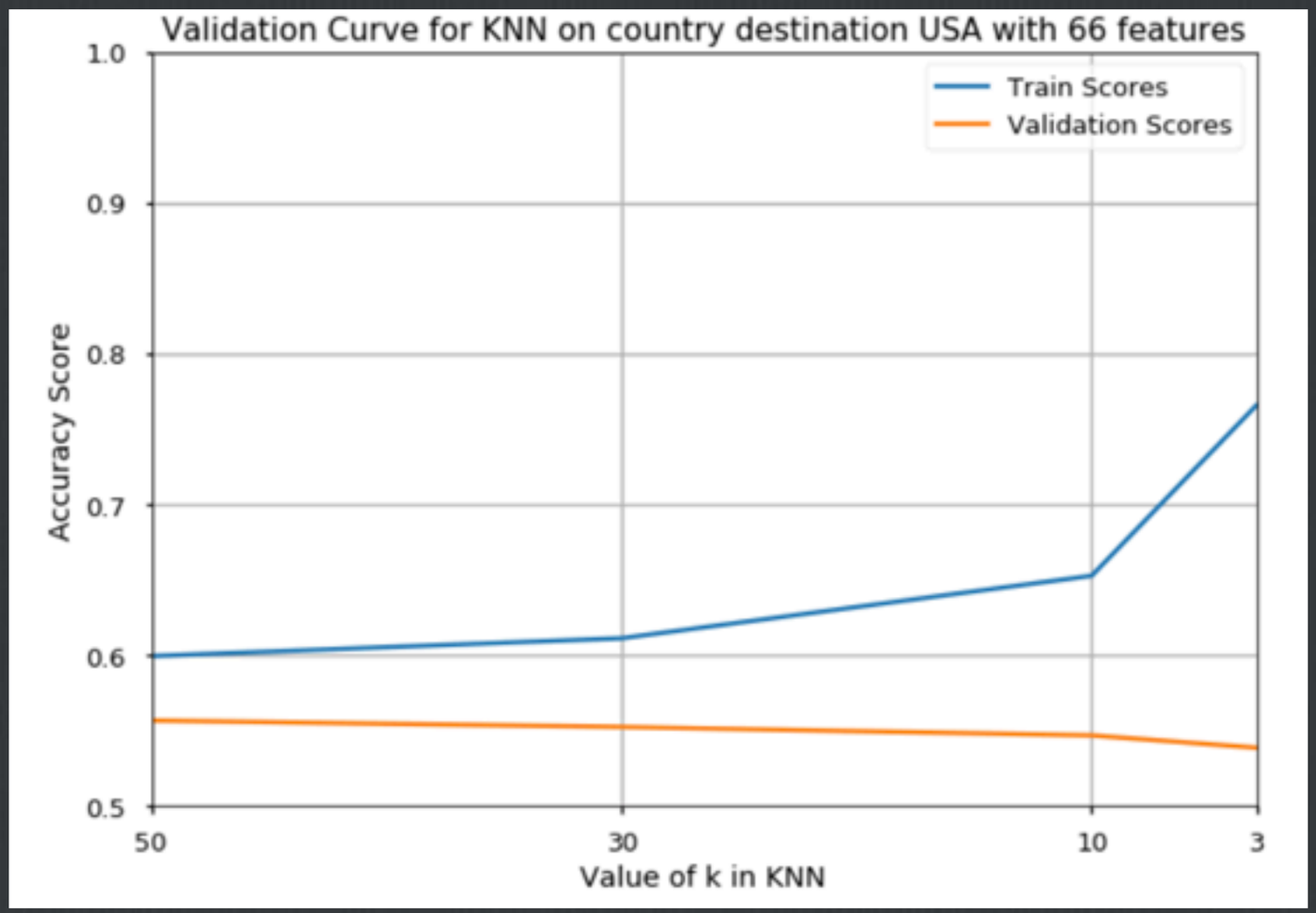
Other stuff


Validation Curve for KNN on country destination USA with 66 features
Train Scores
Validation Scores
Accuracy Score
1.0
0.9
0.8
0.7
0.6
0.5
50
30
10
3
Value of k in KNN