Social Media Prediction Kaggle Competition - L'Équipe

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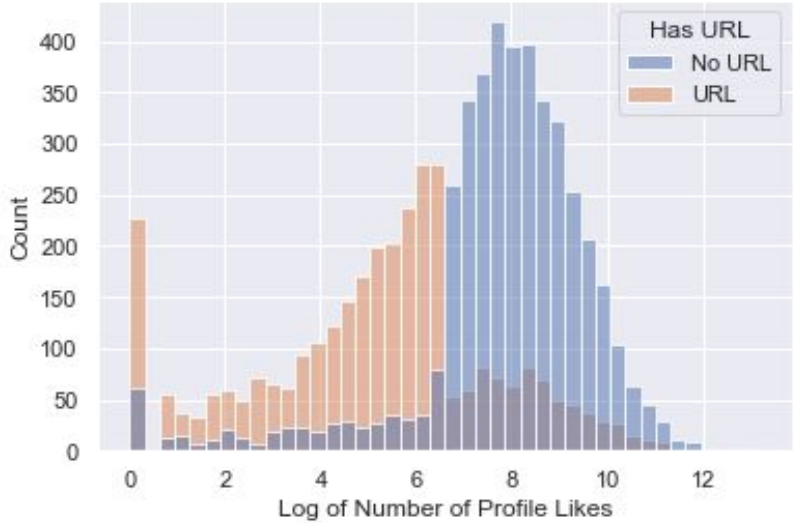
IFT-6758 Data Science

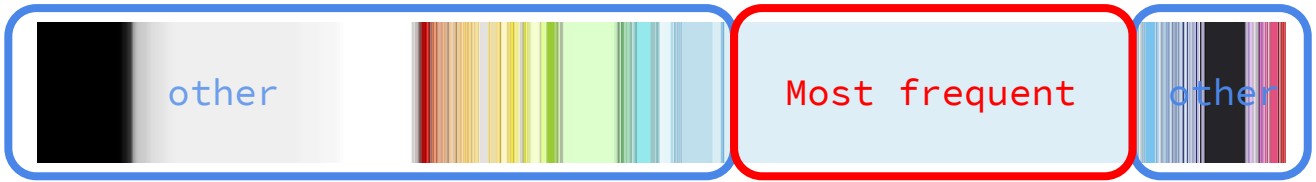
Data cleaning/feature engineering

- Uniformisation (lower case, identify Nan)
- Change URL to “Has Url” column
- Median imputation for Nan



Data cleaning/feature engineering

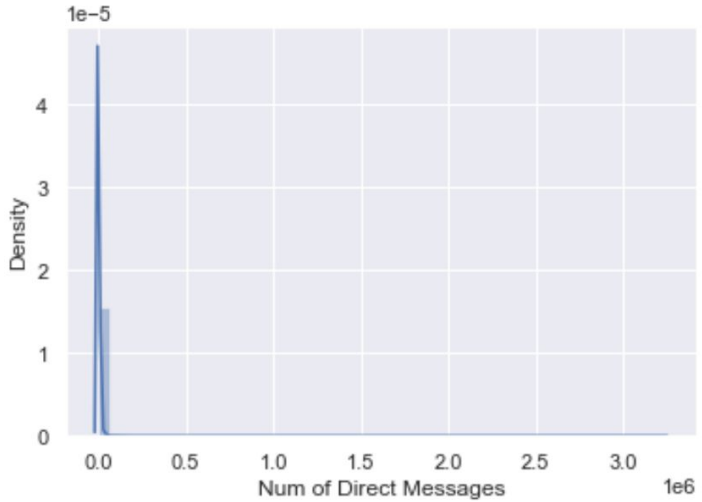
- Keep most frequent categories (that were correlated) and put remaining in “other”

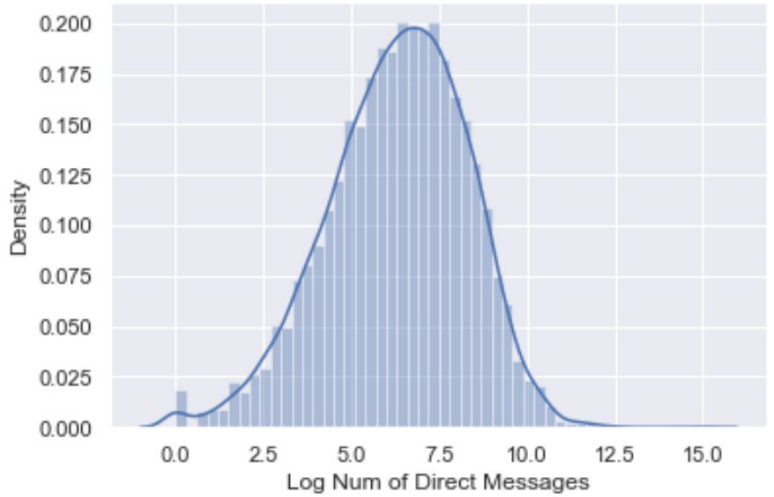


Profile Page color

Data cleaning/Feature engineering

- Log transform of numerical features





Data cleaning/Feature engineering

- Estimated clicks since creation
- Bag-of-words for Location
- Target mean for categorical data
- Failed creative methods: Sin/Cos on UTC

Keep the features that are correlated to the target

Model Selection (First steps)

- Some(log of)features decently linearly correlated with **log of target values (r>0.3)**
  - Linear models (Linear regression, SVM)
- Many categorical features: Try decision tree-based models.
- Ensemble models involving decision trees: Random Forests

Model Selection (Ensembling)

-Try more tree-based ensembling models:

  -LightGBM, great right out of the box. Scores 1.71 by itself on average.

  -XGBoost, needed fine tuning. Performed poorly out of the box. After hyperparameter tuning, it performed almost as well as LightGBM.

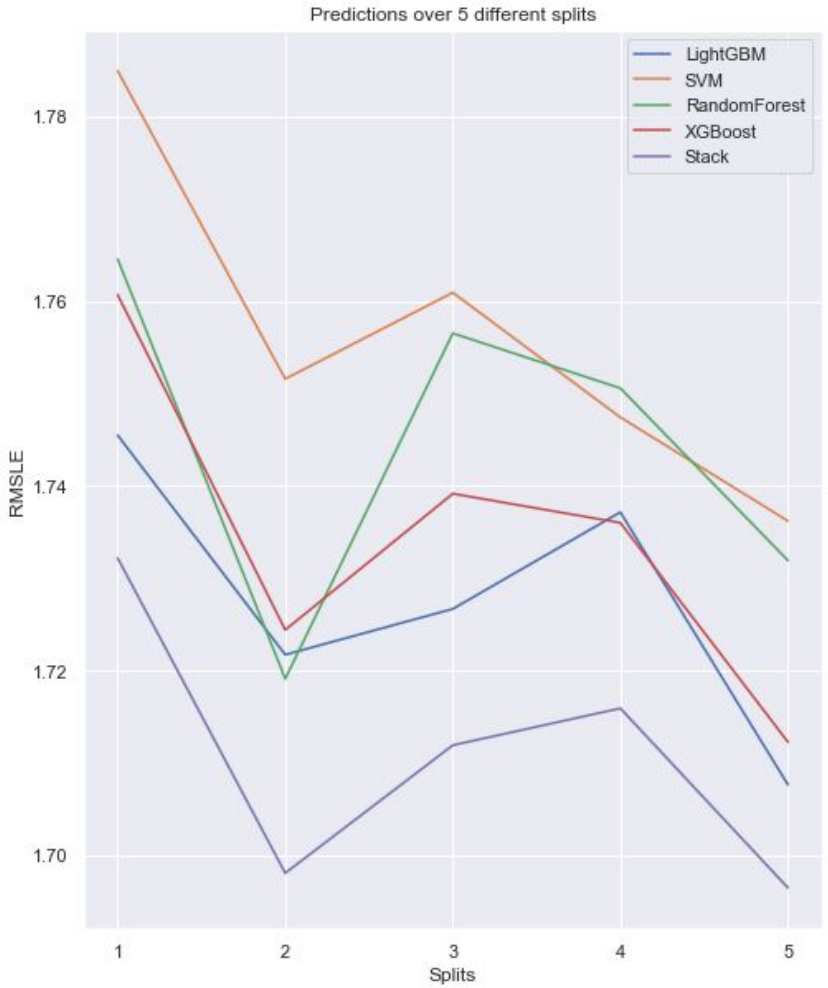
  -Many models performing between 1.71 and 1.85.
  Conclusion: Stacking regressor!

Model performance

Similar performances.

LightGBM performs better of al solo models (on average)

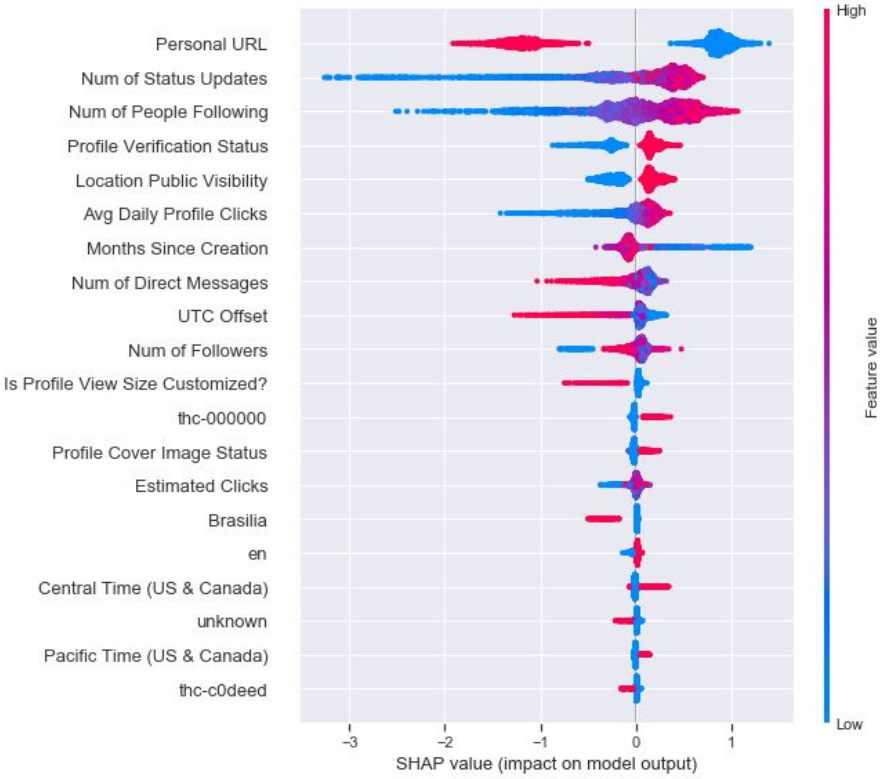
Stack performs best almost every time.



Validation

- 50-fold cross validation
- Hyperparameters tuning (gridSearchCv)
- Reduce the bias because more data points are considered (compared to val-split)
- Reduces Variances as more data points are used in the validation set.
- Reduces overfitting

Shapley Values - Interpretability/Feature Selection



- On the log transformation of the Number of Profile Likes.
- Red means upper range of feature value, blue means the lower range.
- Points on the right contributes to predicting higher values and the ones on the left contributes to predicting lower values.

Thanks!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