Subreddit Classification

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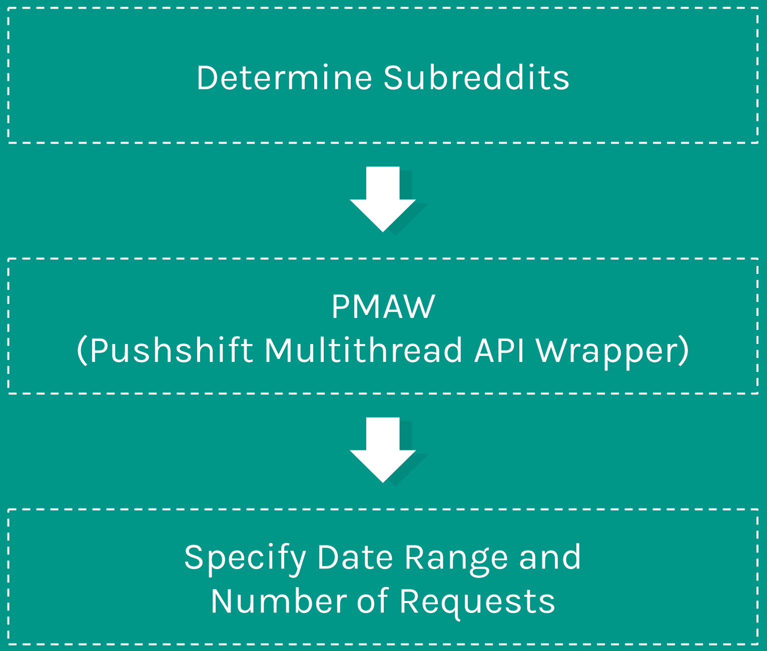
DSI - 523

Data Collection

Data Collection Process



Determine Subreddits

PMAW
(Pushshift Multithread API Wrapper)

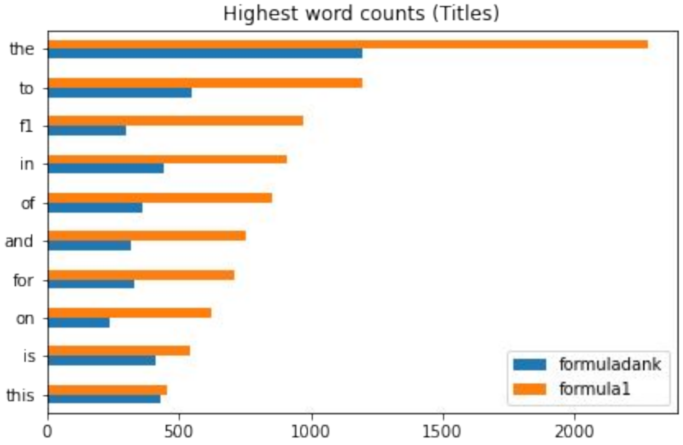
Specify Date Range and
Number of Requests

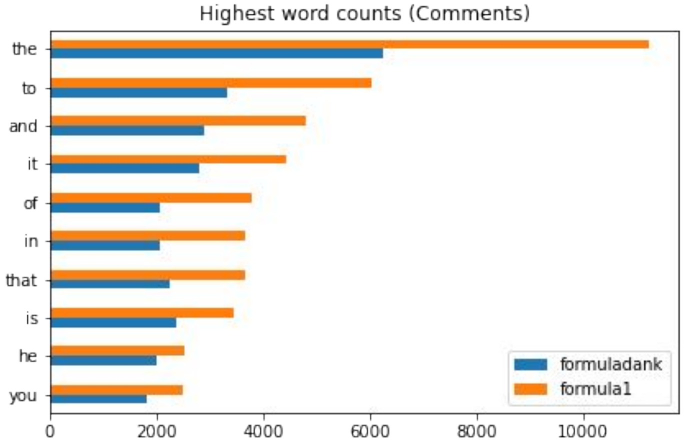
Data Collection

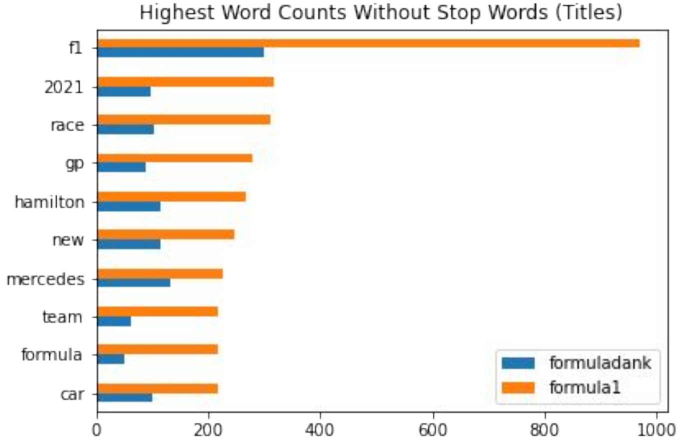
- Subreddits chosen: r/formula1 and r/formuladank
    - Formuladank is Formula 1 memes.
- 10,000 comments per subreddit
- 5,000 posts per subreddit
- Date Range: 1/1/2021 thru 6/24/2022

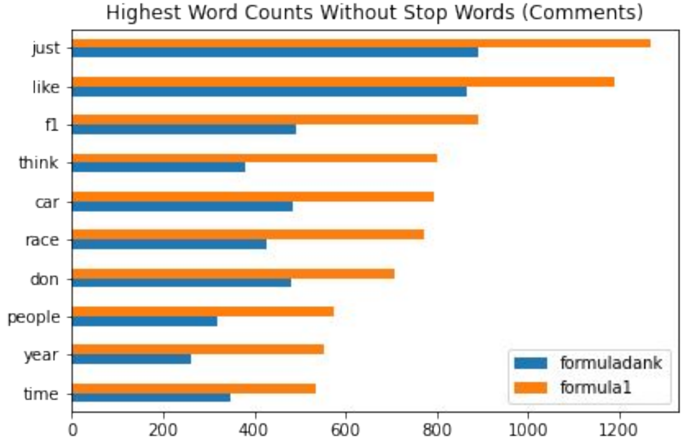
Exploratory Data Analysis

WORD COUNTS

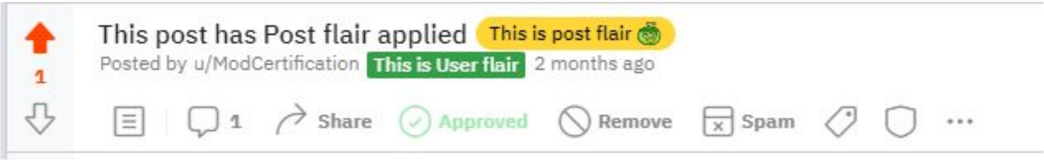

Highest word counts (Titles)


Highest word counts (Comments)


Highest Word Counts Without Stop Words (Titles)


Highest Word Counts Without Stop Words (Comments)

Flairs



This post has Post flair applied This is post flair

Posted by u/ModCertification This is User flair 2 months ago

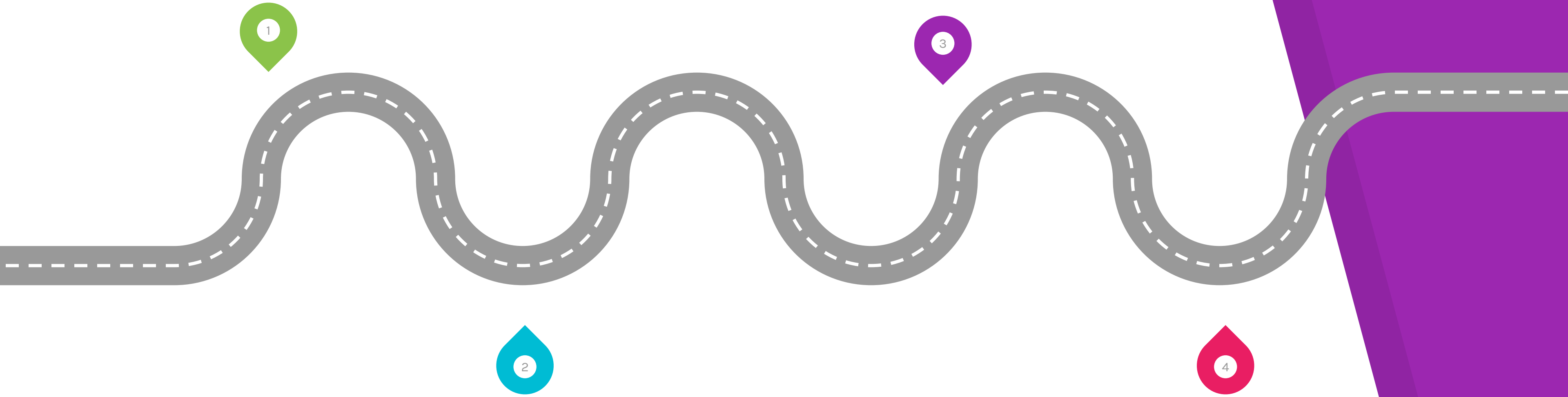
- 3135 flair-less users in all comments
    - 3088 in formula1
- 2413 flair-less users in all posts
    - 2205 in formula1

Formula1 flair: Max Verstappen
Formuladank flair: Don't know f1 but memes are kinda funny

Image Source: https://mods.reddithelp.com/hc/en-us/articles/360010541651-User-Flair

Modeling

Roadmap



Build a simple model with no hyperparameters

Using the models that did well, grid search for hyperparameters

Iterate on grid search parameters by adding more

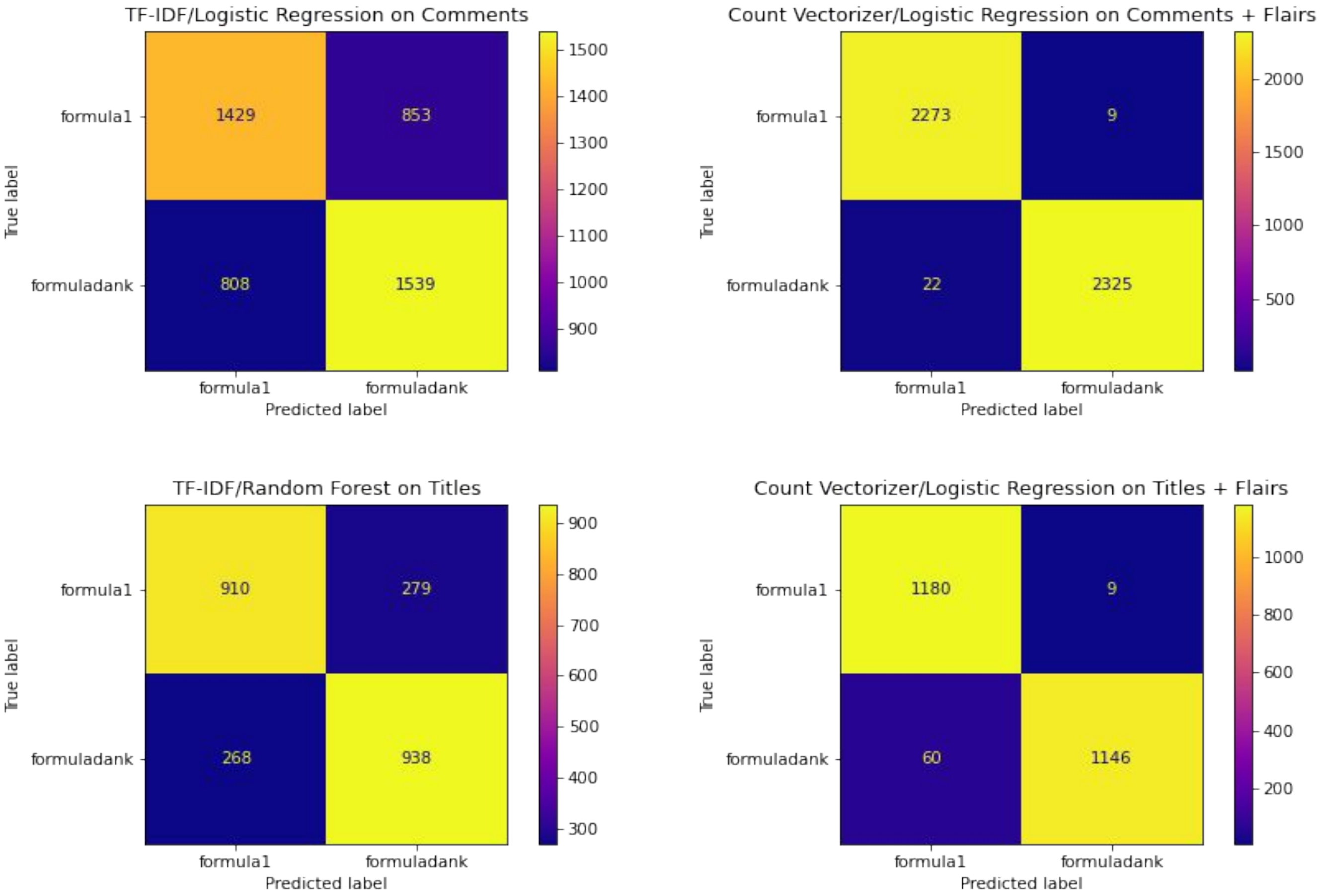
Should features be added or removed? Return to start

Model Parameters and Accuracy

	TF-IDF & Logistic Regression (Comments)	Countvectorizer & Logistic Regression (Comments + Flair)	TF-IDF & Random Forest (Titles)	Countvectorizer & Logistic Regression (Titles + Flair)	Countvectorizer & Logistic Regression (Only flairs from comments)	Countvectorizer & Logistic Regression (Only flairs from titles)
Feature Extraction Parameters	Max df: 0.3 Max Features: 10,000	Defaults	Max df: 0.25 Max Features: 8,000	Defaults	Defaults	Defaults
Classifier Parameters	C: 0.75	Defaults	Num of estimators: 200	Defaults	Defaults	Defaults
Training Accuracy	75.5%	99.7%	99.8%	98.4%	99.5%	97.8%
Testing Accuracy	64.1%	99.3%	77.2%	97.1%	99.5%	97.3%

Baseline Accuracy	50%

Confusion Matrices for Models



TF-IDF/Logistic Regression on Comments

Count Vectorizer/Logistic Regression on Comments + Flairs

TF-IDF/Random Forest on Titles

Count Vectorizer/Logistic Regression on Titles + Flairs

Next Steps

❑ Dive deeper into grid searching with flairs as a feature
❑ Model other similar subreddit pairs
❑ Find other interesting features to use

Conclusions

❑ Building a model for two similar subreddits is very difficult

❑ Adding extra features can be extremely useful

❑ Complex models do not always outperform simple ones.

Image source: https://www.reddit.com/r/formuladank/comments/pmv92e/bottas_meme_transparent_template/

THANKS!

Any questions?

Special thanks to all the people who made and released these awesome resources for free:

- Presentation template by SlidesCarnival
- Photographs by Death to the Stock Photo (license)