# WEB API & CLASSIFICATION

# Problem Statement

- To build different classification models that can accurately classify between subreddit topics based on text posts
- As a reddit moderator, it is useful to find posts that are posted in the wrong subreddit.

- subreddits chosen r/datascience & r/learnprogramming

Number of rows in subreddit datascience : 827
Number of rows in subreddit learnprogramming : 976
Baseline accuracy: 0.5413200221852468

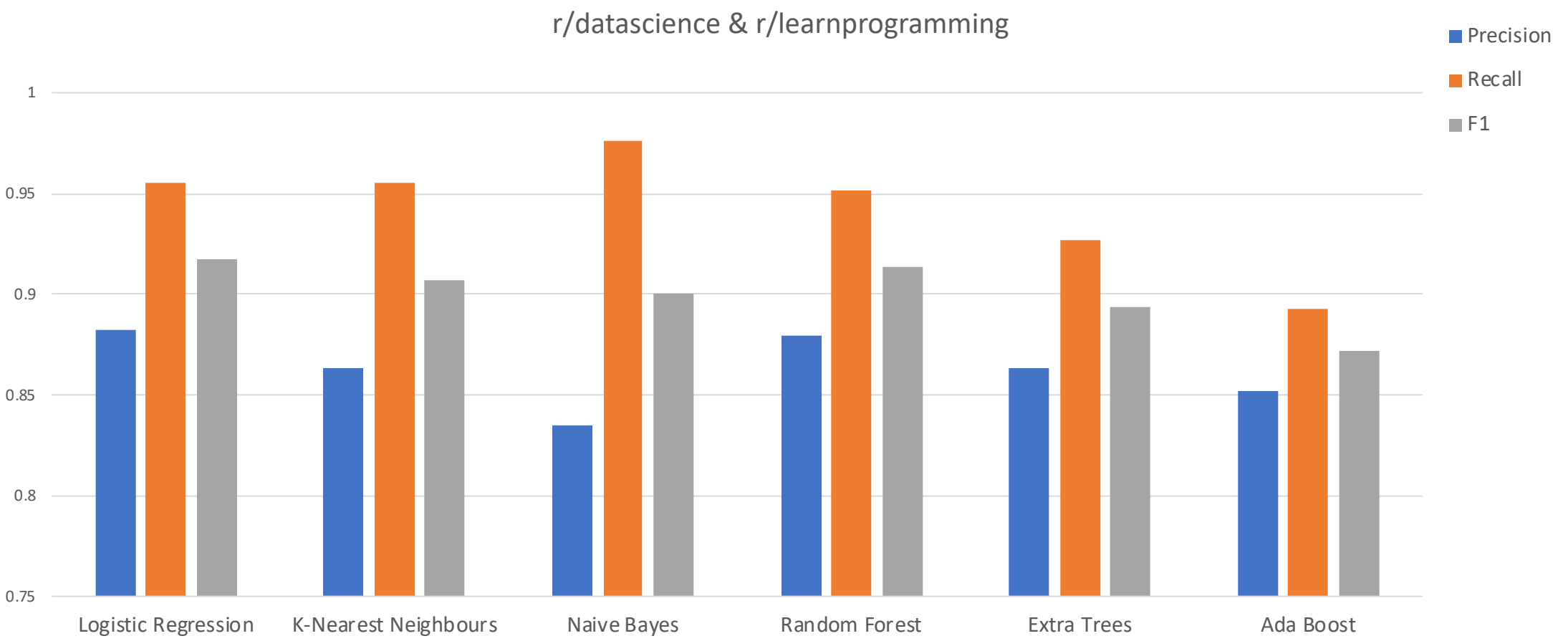
# Modelling process

- Scrape subreddit data
- Clean text, lemmatize and remove stop words
- Convert processed text to vectors using count vectorizor or tf-idf
- Perform grid search over all parameters for all models
- Evaluate models base on accuracy score
- Find out frequently occurring words that are classified correctly and wrongly

# Model Results for r/datascience and r/learnprogramming

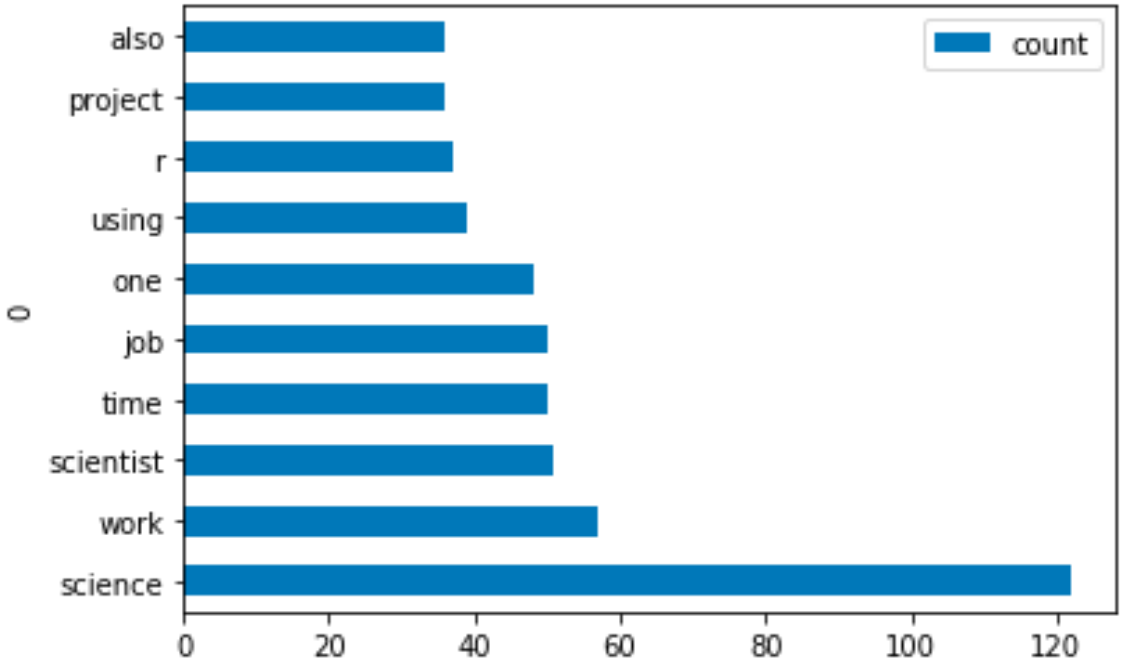
| Models | Test Score | TP | FP | TN | FN | Precision | Recall | F1 |
|---|---|---|---|---|---|---|---|---|
| Logistic Regression | 0.907 | 233 | 31 | 176 | 11 | 0.882 | 0.955 | 0.917 |
| K-Nearest Neighbours | 0.894 | 233 | 37 | 170 | 11 | 0.863 | 0.955 | 0.907 |
| Naive Bayes | 0.883 | 238 | 47 | 160 | 6 | 0.835 | 0.976 | 0.900 |
| Random Forest | 0.896 | 232 | 35 | 172 | 12 | 0.879 | 0.951 | 0.914 |
| Extra Trees | 0.880 | 226 | 36 | 171 | 18 | 0.863 | 0.927 | 0.894 |
| Ada Boost | 0.858 | 218 | 38 | 169 | 26 | 0.852 | 0.893 | 0.872 |

# Model Results (Graph)

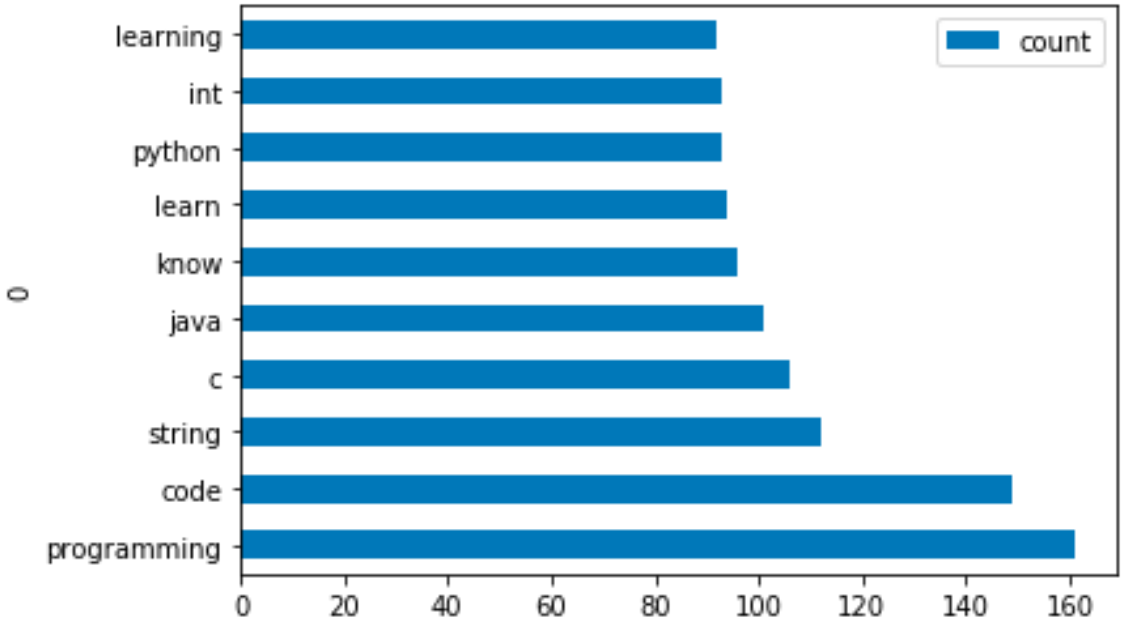


# Top words used that are correctly classified

r/datascience

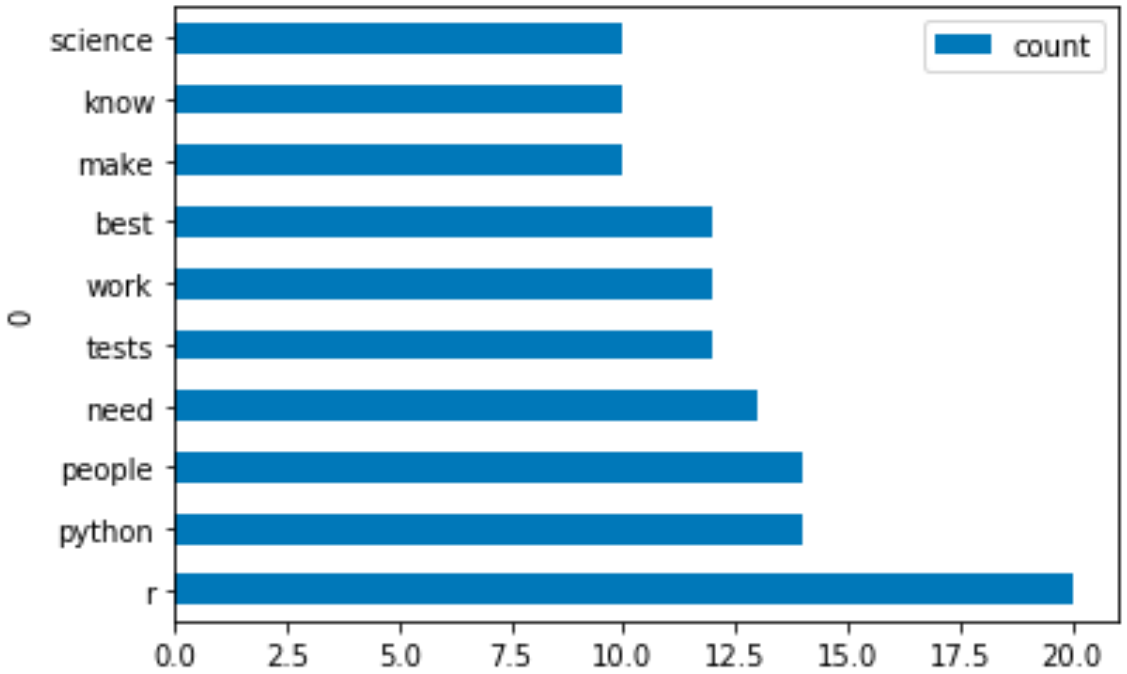



r/learnprogramming

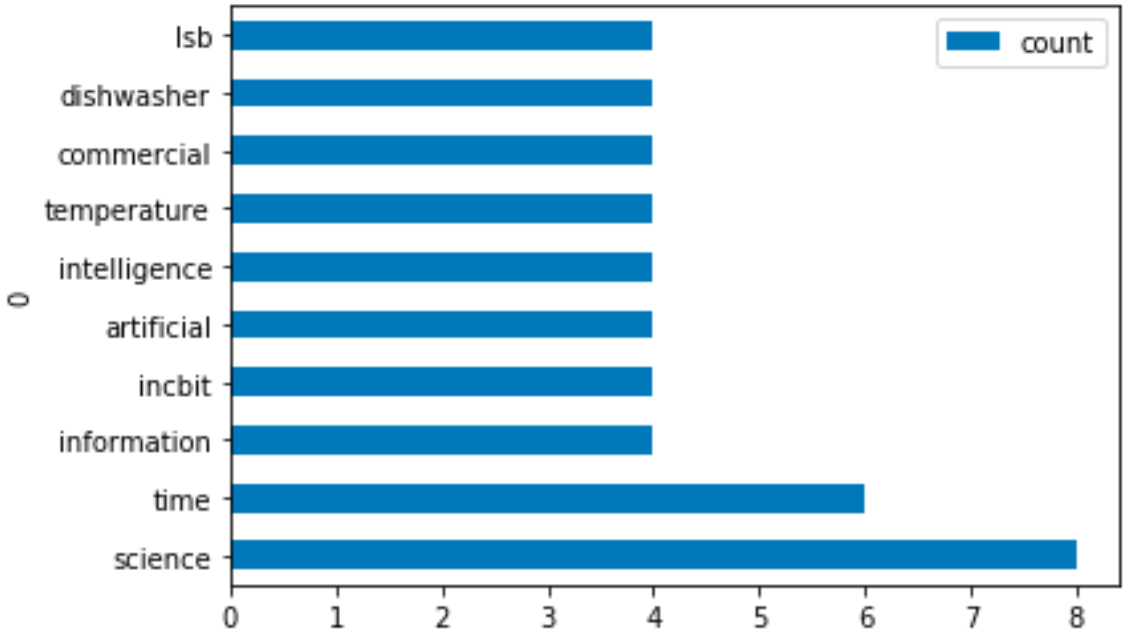


# Top words used that are misclassified

r/datascience




r/learnprogramming



# Conclusion & Inferences

- There is no one model that can work well for all subreddit
- Best model is logistic regression
- Best parameters for count vectorizer is 1 gram tokenize with 2500 max features, using tfidf transform

- As a moderator it is good to find out those post with words that are misclassified when using the model