GA DSI 26 Project 3: Wine and Beer

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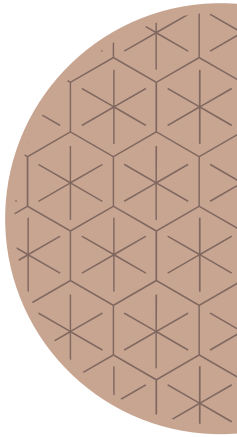
Task:

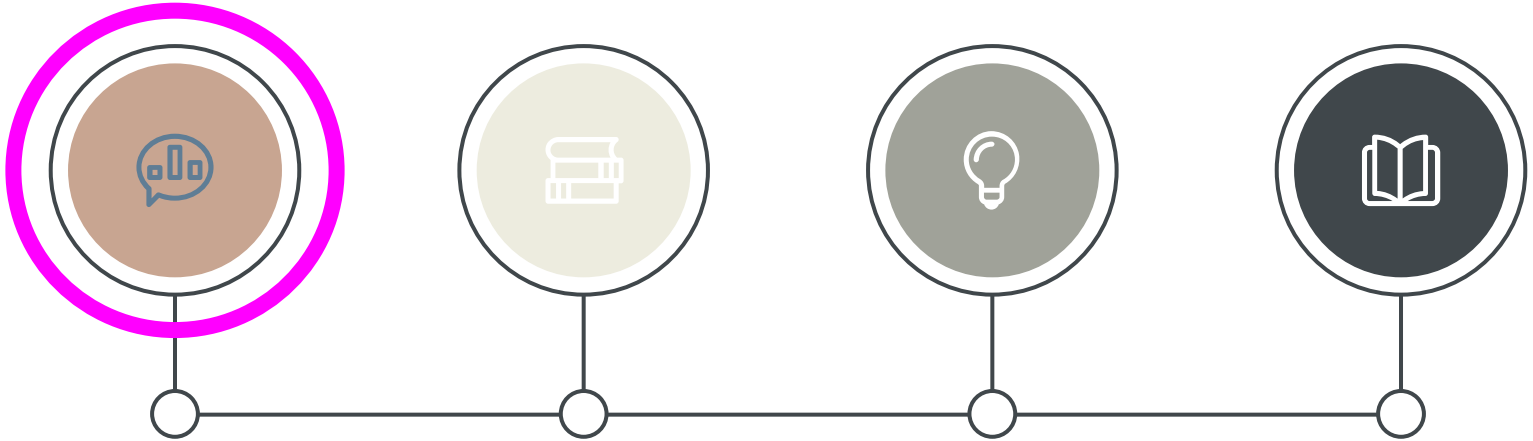
- Understand consumer patterns
- Identify if the consumer wants winemaking or homebrewing info
- Train model with subreddit posts

Data Description

- 1,000 posts from each subreddit
  - r/winemaking
  - r/homebrewing
- Cleaned punctuation, stopwords, delimiters
- Considered both unigrams and bigrams



Model Workflow



Data Cleaning

- Missing values
- Vectorization

Modelling

- Building models

Testing

- Scoring models

Recommendations

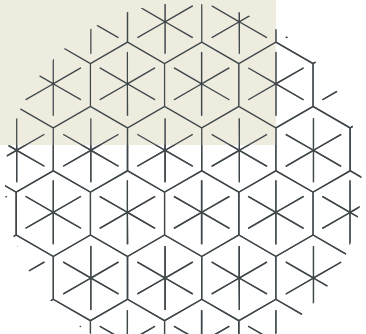
- Important features

Missing Values

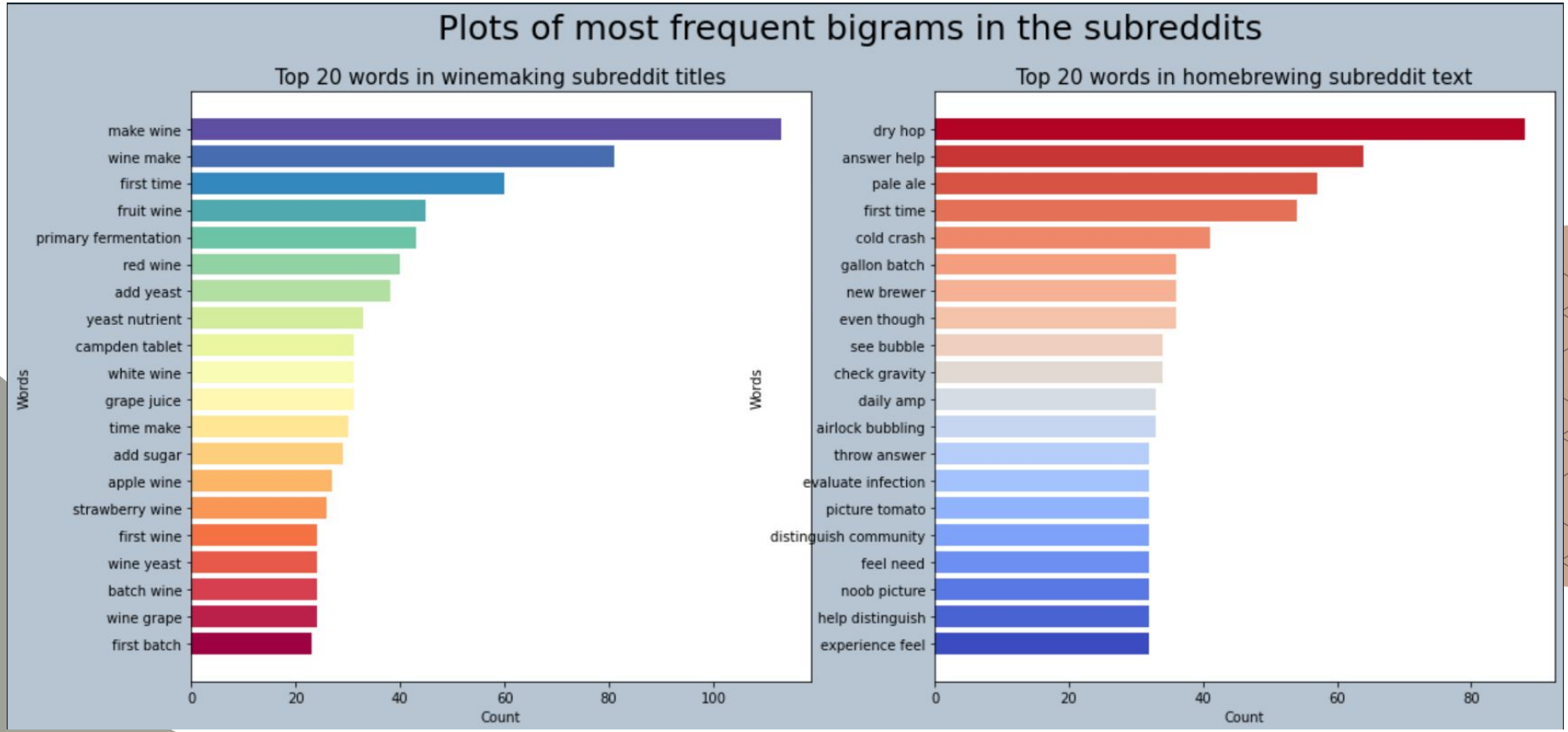
There are different types of missing values:

- Duplicate posts were removed
- Null and removed texts were replaced with the empty string
- One deleted post was miscategorized, we removed it

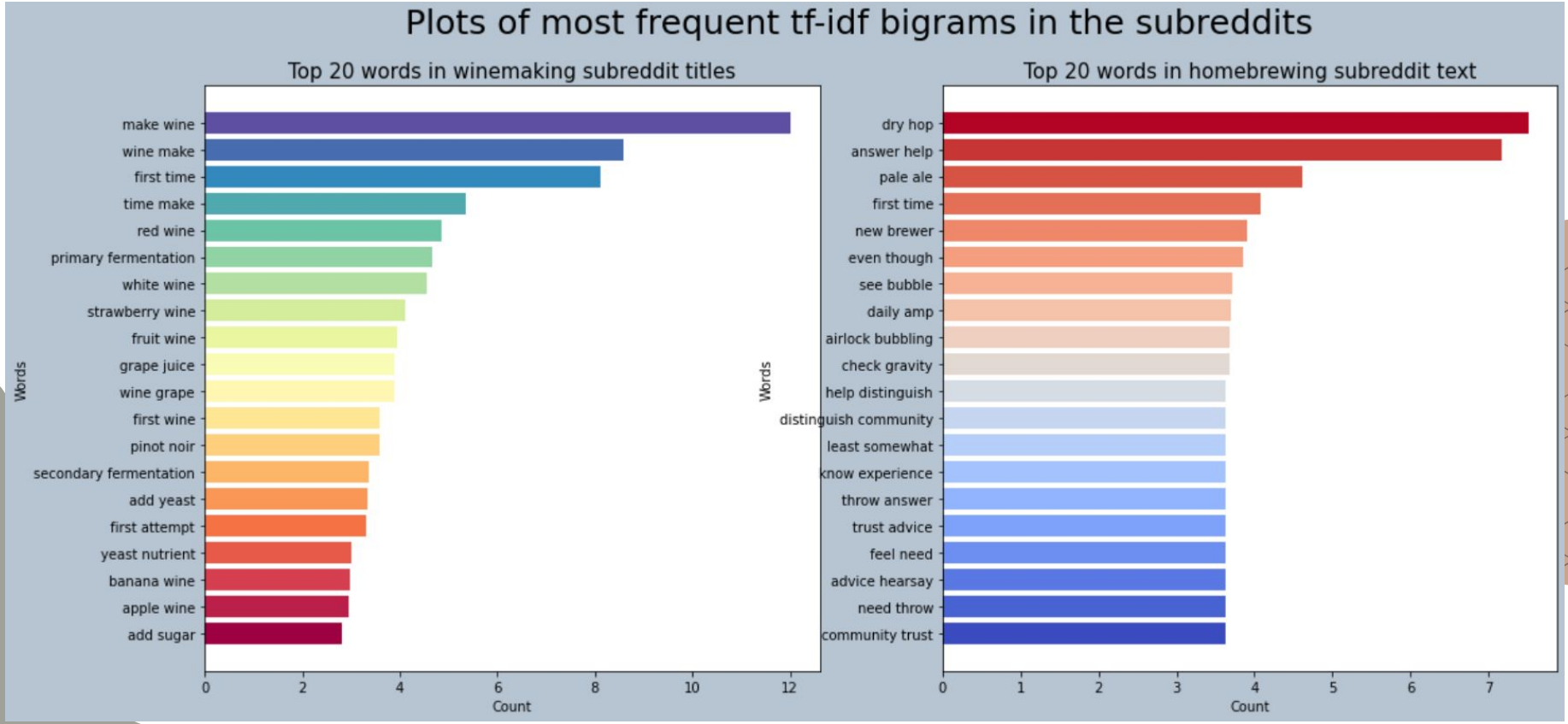
1969 rows left



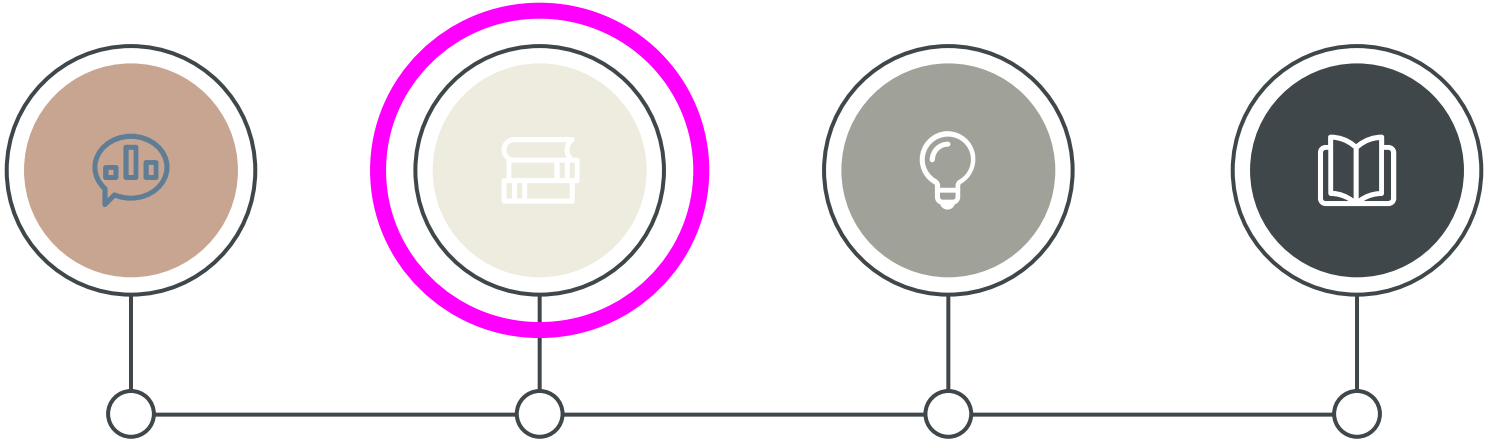
Plots of most frequent bigrams in the subreddits



Plots of most frequent tf-idf bigrams in the subreddits



Model Workflow



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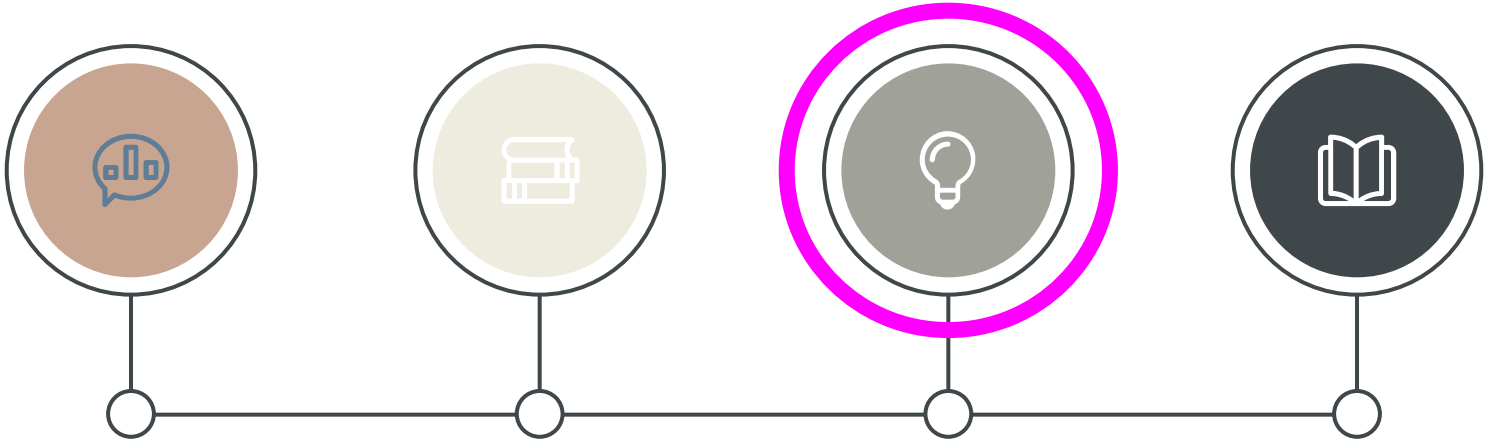
Modelling

- 8 models:
  - Logistic regression
    - Count
    - Tf-idf
  - KNN classifier
    - Count
    - Tf-idf
  - Naïve bayes
    - Count
    - Tf-idf
  - Random forest
    - Count
    - Tf-idf

Scoring

- ROC-AUC to determine best models
- F1 score to compare baseline score
- Accuracy to determine whether overfit

Model Workflow



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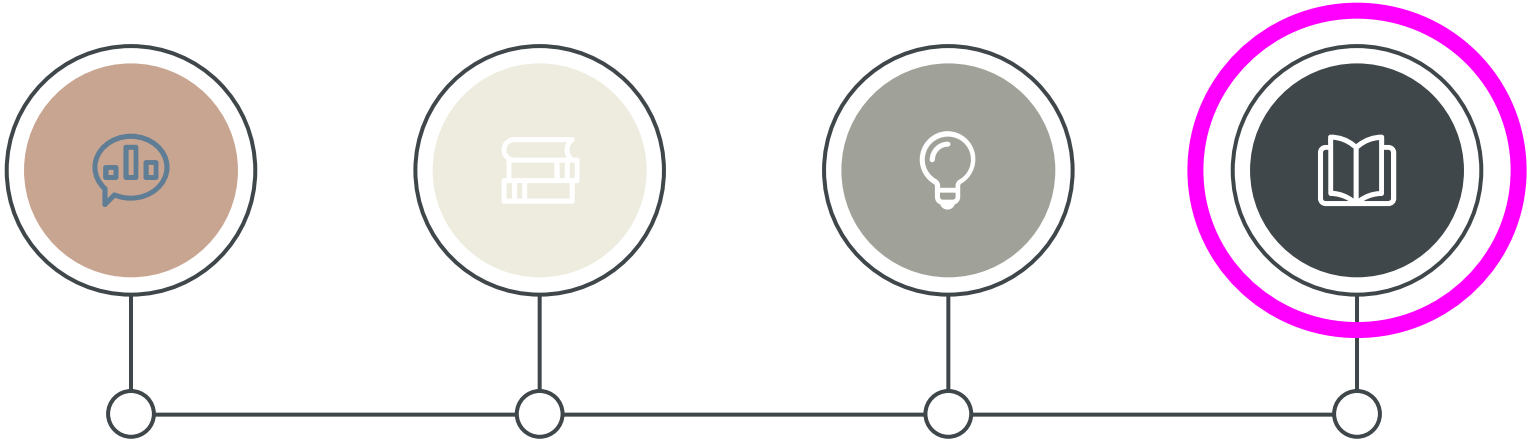
Logistic Regression performed the best

models	vectorizer	accuracy score	auc score
Logistic Regression	count	0.897	0.961
Logistic Regression	tf-idf	0.917	0.975
KNN Classifier	count	0.720	0.851
KNN Classifier	tf-idf	0.580	0.655
Naïve Bayes	count	0.789	0.925
Naïve Bayes	tf-idf	0.789	0.925
Random Forest	count	0.890	0.964
Random Forest	tf-idf	0.888	0.966

0.97 ROC-AUC
0.92 accuracy

Model Workflow



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Best Model

Features

- Wordnet lemmatizer
- Tf-idf vectorizer
- Logistic regression with ridge penalty

Limitations

- Spell check before lemmatizing
- Slightly overfit, could remove more stopwords

Thanks