BUMBLE

GOOGLE PLAY STORE - APP REVIEWS

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INTRODUCTION

- Bumble is a dating application.
- Most popular dating app, after tinder.
- Profiles of potential matches are displayed to users, who can **swipe left** to reject a candidate, or **swipe right** to indicate interest.
- Users can sign-up using their phone number or Face Book profile.
- Subscription fee (3 types) or free.
- The users have options for searching romantic partners, or friends in **BFF** mode.
- In heterosexual matches, only **female** users can make the first contact with matched male users. The company reports having over 55 million users in 150 countries as of 2019.

GOAL

- To analyze the reviews –
  - User reviews give a chance to make the application better.
- Topic Modeling -
  - Divide the reviews into clusters of different topics
  - Know the percentage of each topic

DATA

- Data Set
  - Initially there were - 110031 entries
  - 10 columns – reviews, ratings, date, …
  - Target Variable – **content**, which has reviews by users
  - Different languages with script in English and Non-English
  - Extracted only the reviews in English language using **langdetect**
  - 89472 rows – Only English language entries

TOOLS

Pandas – Clean, Explore and Feature Engineering

Scikit-Learn – Build different Classification models and perform cross validation, variable selection and regularization

Matplotlib/ Seaborn – Visualizing data exploration, modeling and results

Python 3.8.5 – to run all of the above

nltk - Natural language toolkit, to work with human language data.

RESULTS

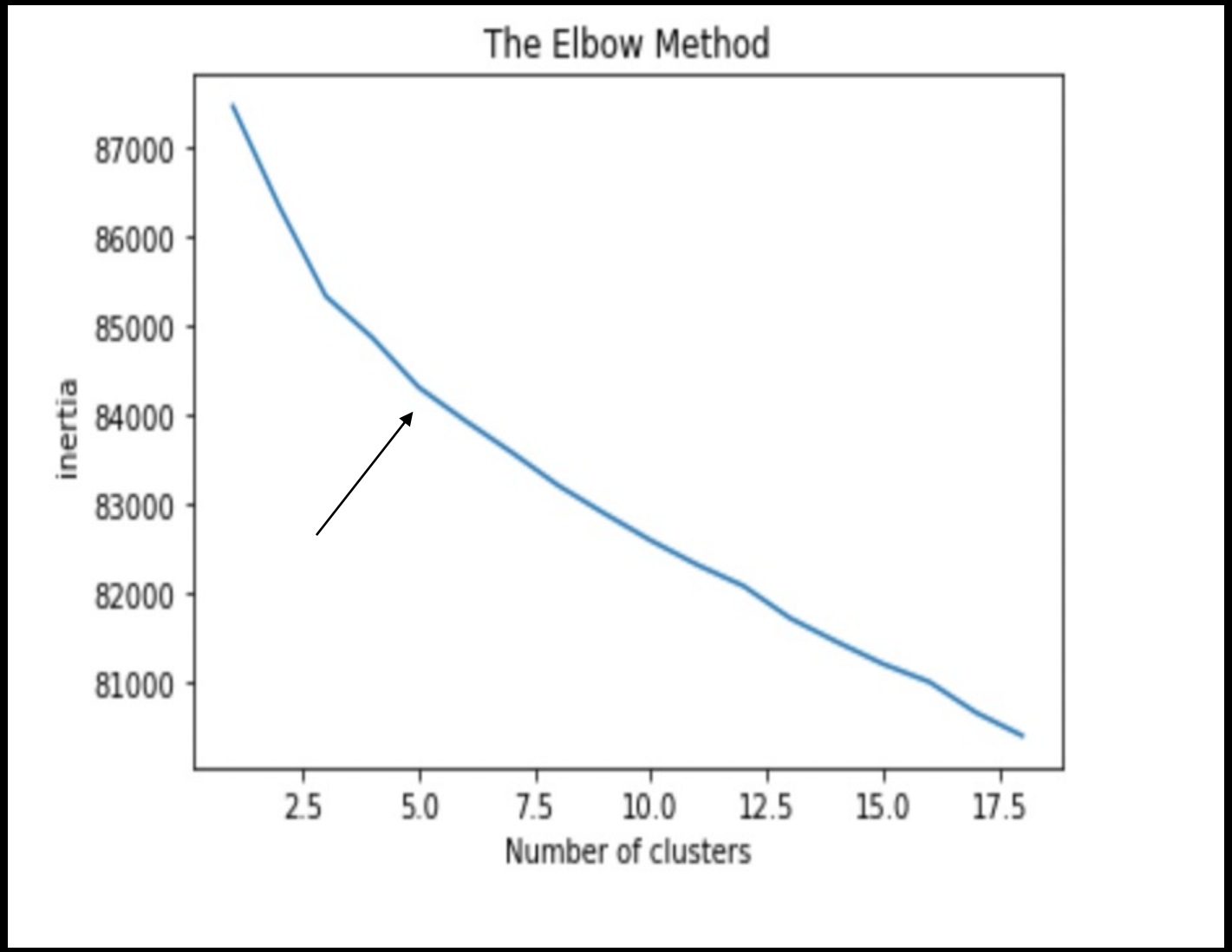
- Five different topics were discovered –
  - Bad Reviews For Paid Subscriptions
  - Profile Match
  - Good Reviews About The App
  - Good Reviews About People On The App
  - Easy To Use

METHODOLOGY

- Transform the text data into a matrix, which represents the weights of each word in the corpus.
- Algorithms Used -
  - K-Means Algorithm
  - NMF – Non-Negative Matrix Factorization
  - Naïve Bayes
- Use the elbow method to decide the number of clusters.

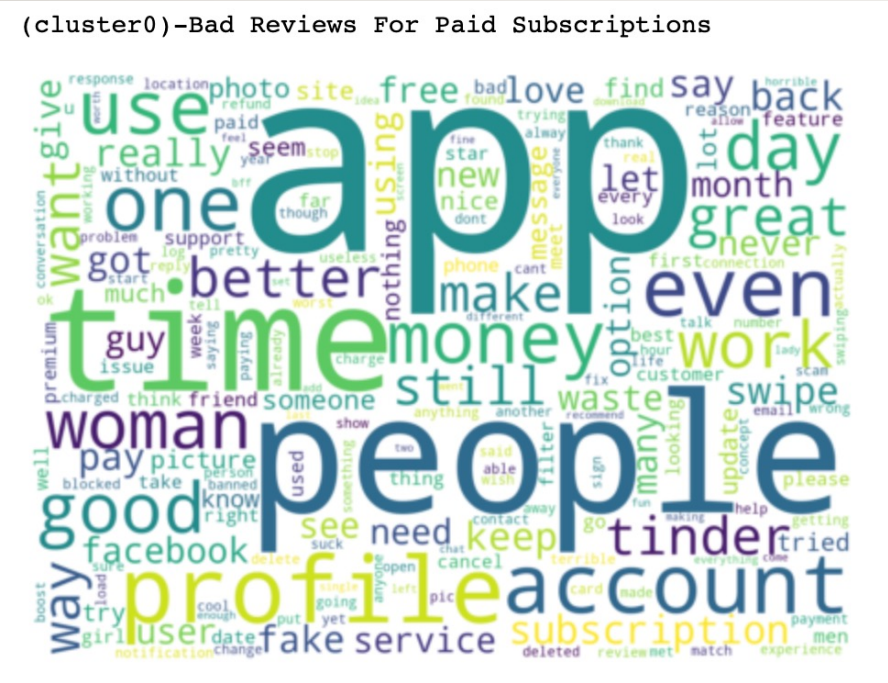
ELBOW METHOD –

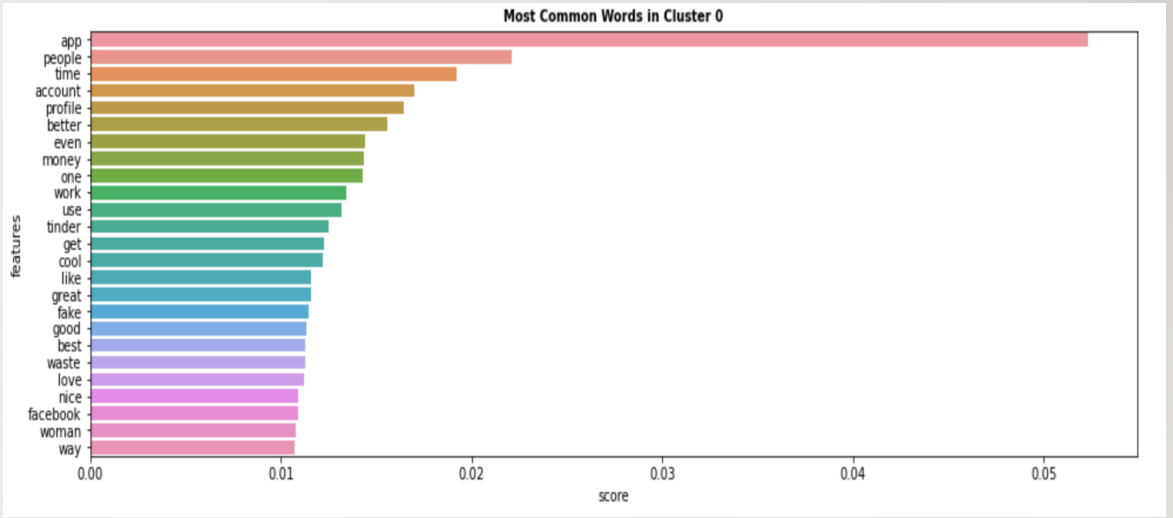
NUMBER OF CLUSTERS VS INERTIA



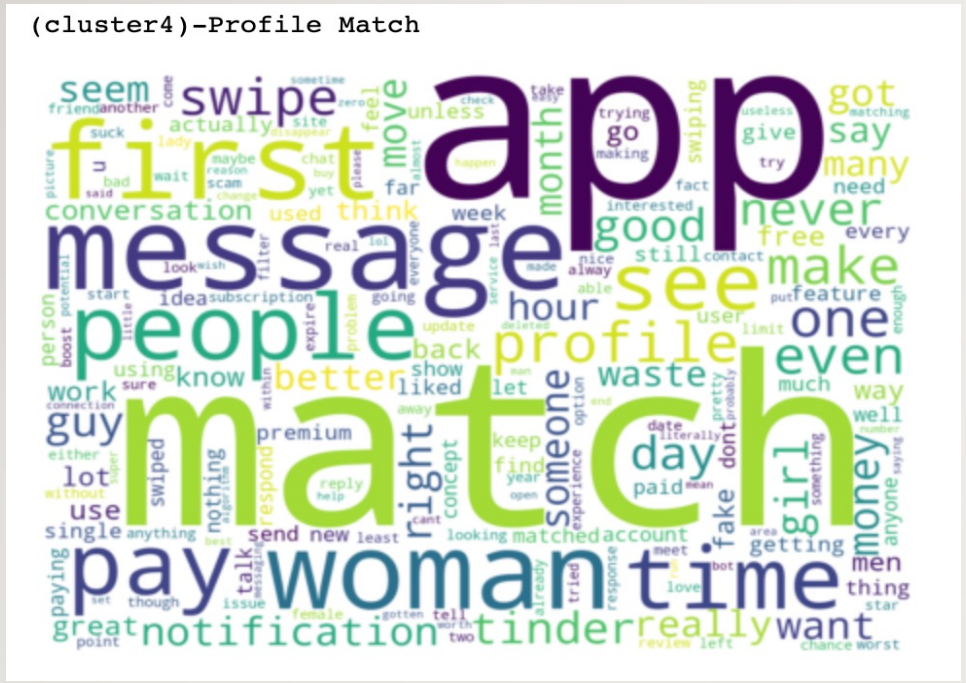
VISUALIZATIONS

GRAPHS AND WORDCLOUD

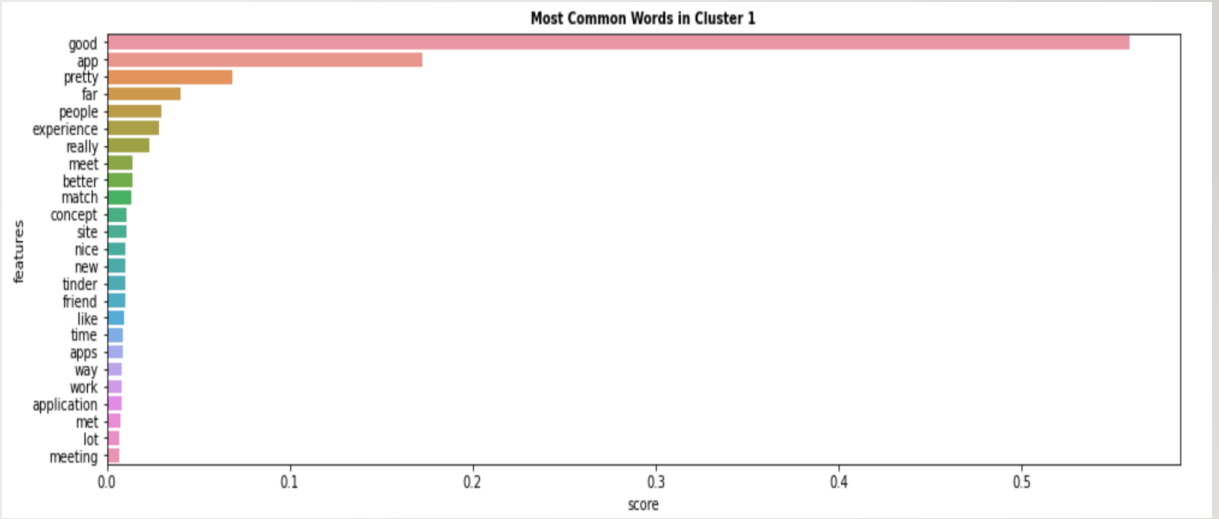




CLUSTER 0 – BAD REVIEWS FOR SUBSCRIPTIONS

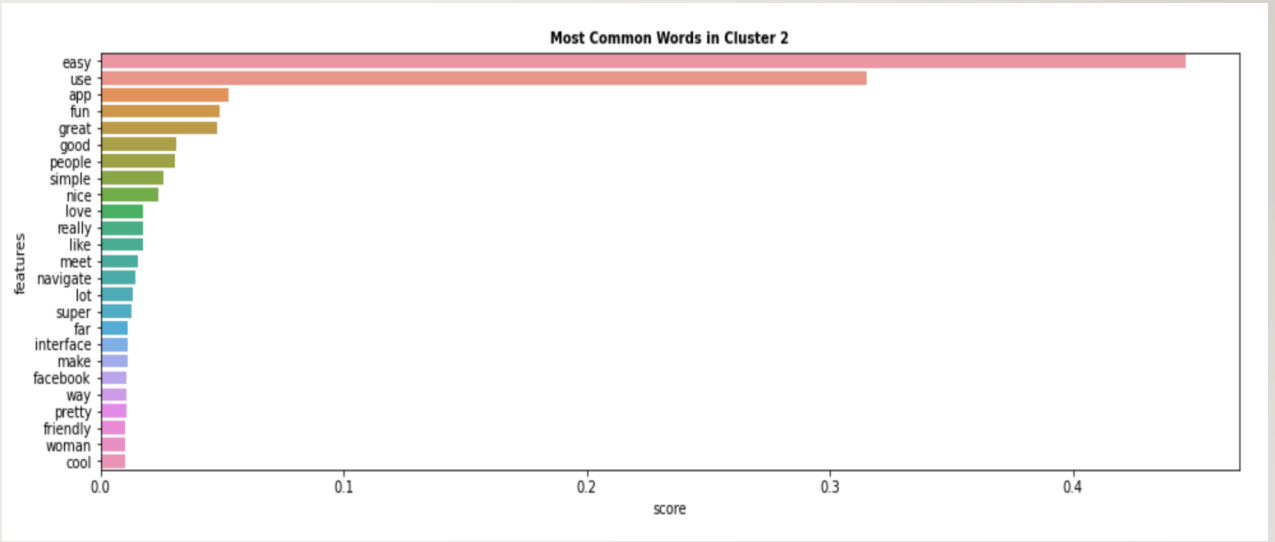


CLUSTER 4 – PROFILE MATCH

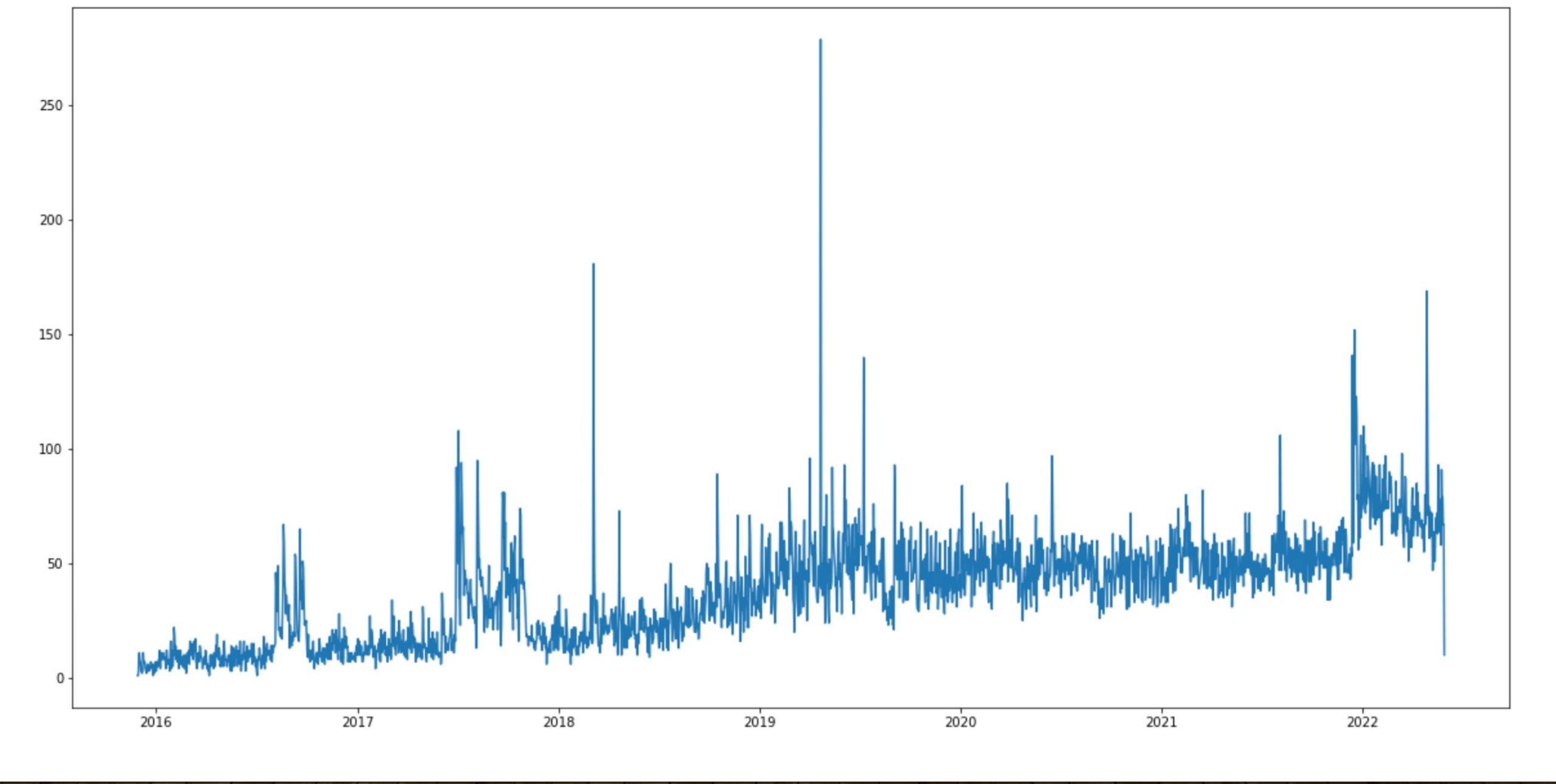


CLUSTER 1 – GOOD REVIEWS

CLUSTER 3 – GOOD REVIEWS ABOUT OTHER USERS



CLUSTER 2 – EASY TO USE


250
200
150
100
50
0
2016
2017
2018
2019
2020
2021
2022

NAÏVE BAYES MODELS

- Gaussian NB Score – 0.503
- Multinomial NB Score – 0.855

FUTURE WORK

- Translate the remaining 20 K non-English entries to English language
- Find the best Coherence Score for NMF model
- Retrain the models
- Deploy the model