Sentiment Analysis of COVID-19 Vaccine Tweets

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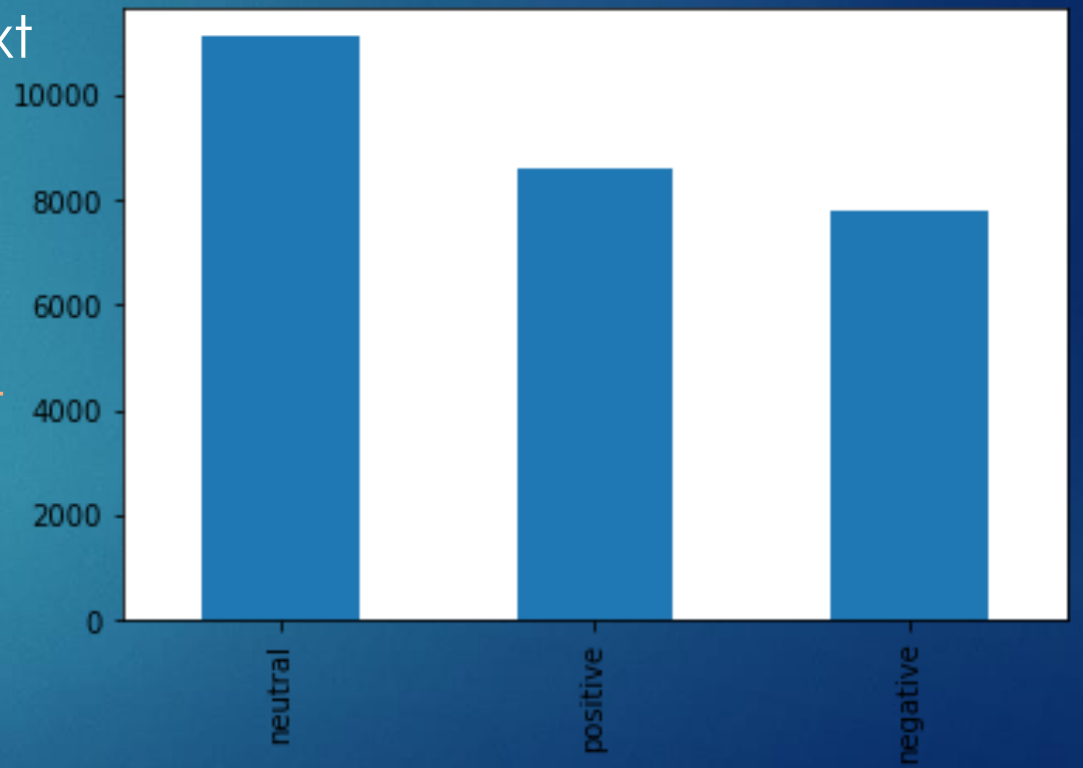
Data

- COVID-19 Vaccine Tweet Dataset from Keggle
  - Collection of tweets since **Dec-21-2020 till Apr-21-2021**
  - Include Pfizer, Moderna, Covaxin, Sinovac, Sputnik, and J&J
    - 60.3k tweets with –
      - User_name
      - User_location
      - Date
      - Tweet text
      - Hashtags
      - Etc.....

Data Contd...

- Twitter Sentiment Dataset
  - Provided by twitter for Keggle competition
  - Existing sentiment labels for tweet text
    - Neutral, Negative, Positive
  - Model Training
- COVID-19 Vaccine Progress Dataset
  - Country
  - Vaccine
  - Vaccination Counts



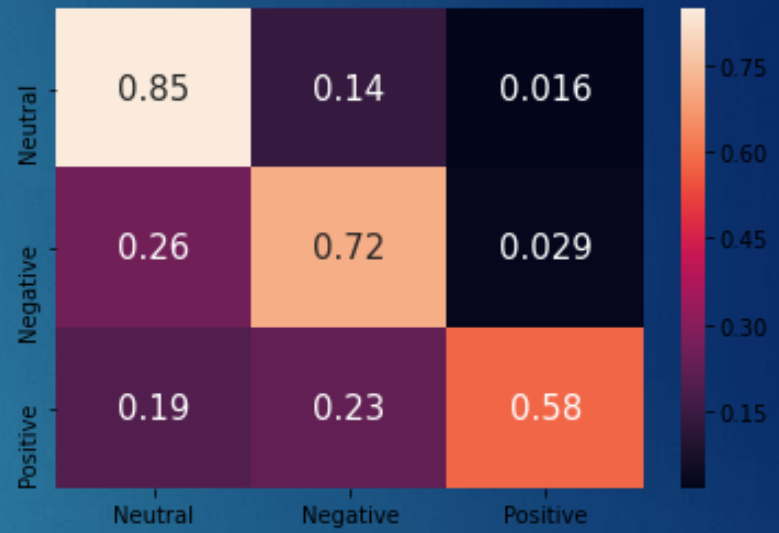
Data Cleaning & Preparation

- Removed –
  - URLs
  - Emails
  - Newline characters
  - Single Quotes
- Label Encoding
- Tokenization/De-tokenization
- Sequencing
- Splitting to Test and Train

Methodology

- Dataset with existing sentiment labels is used to train.

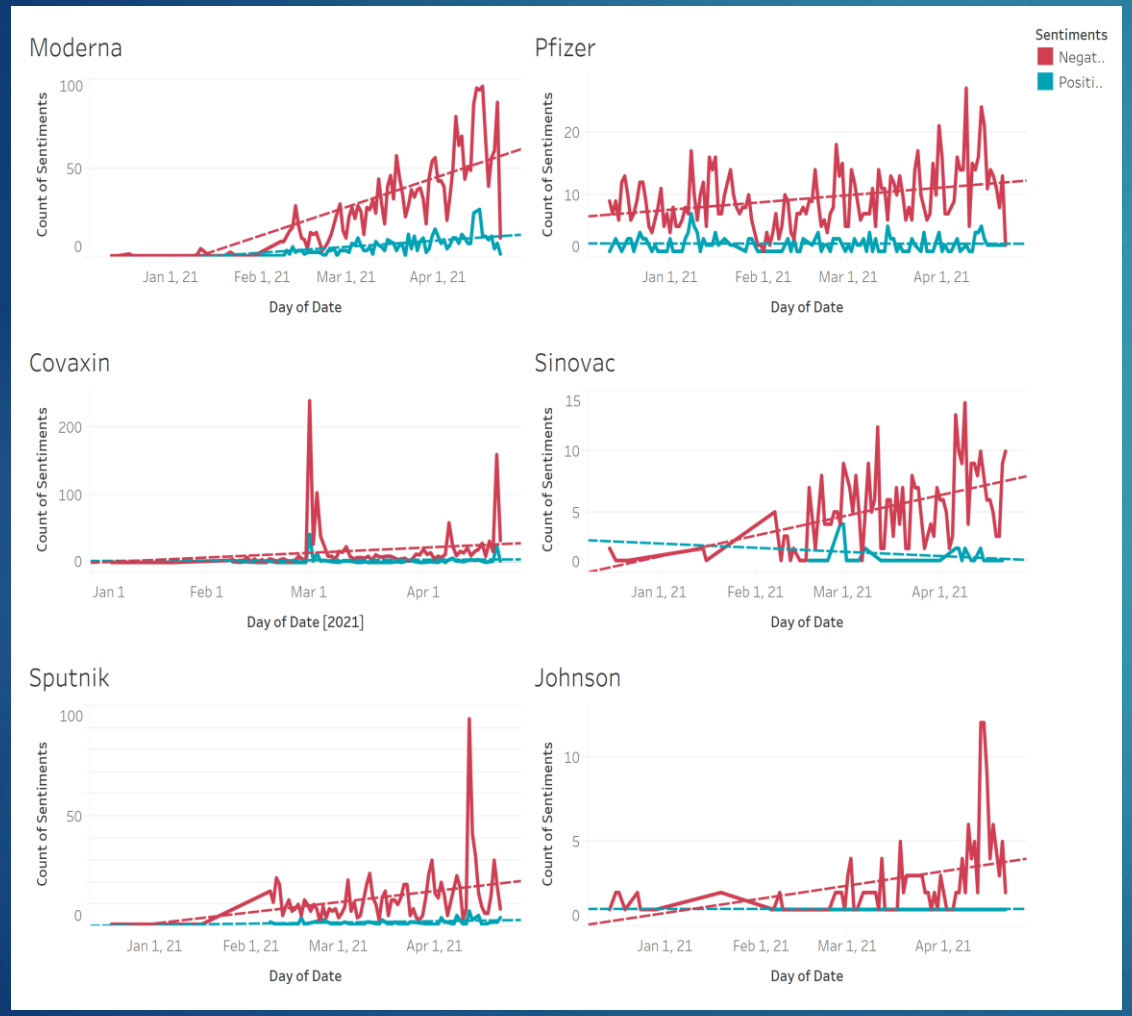
Algorithms	Activation	Batch Size	Optimizer	Accuracy
LSTM	Softmax	3	Rmsprop	71.8%
Bi-LSTM	Softmax	3	Rmsprop	72.7%
1D CNN	Relu	3	Rmsprop	61.5%

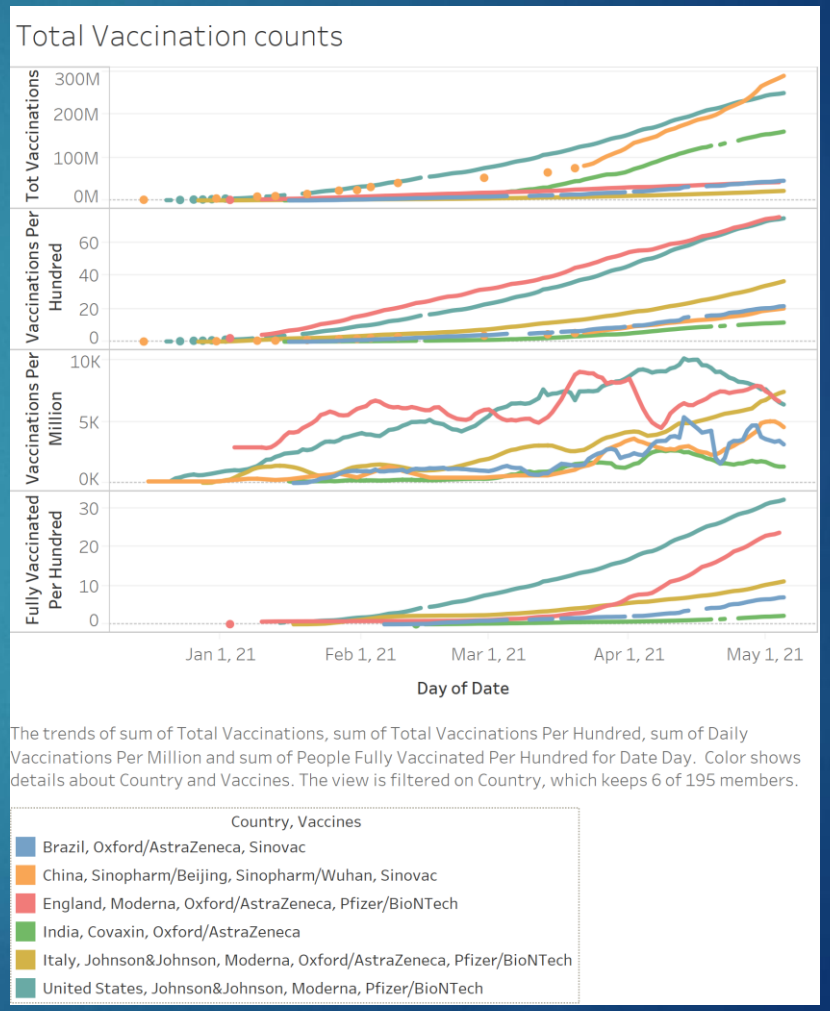


Bi-LSTM Confusion Matrix

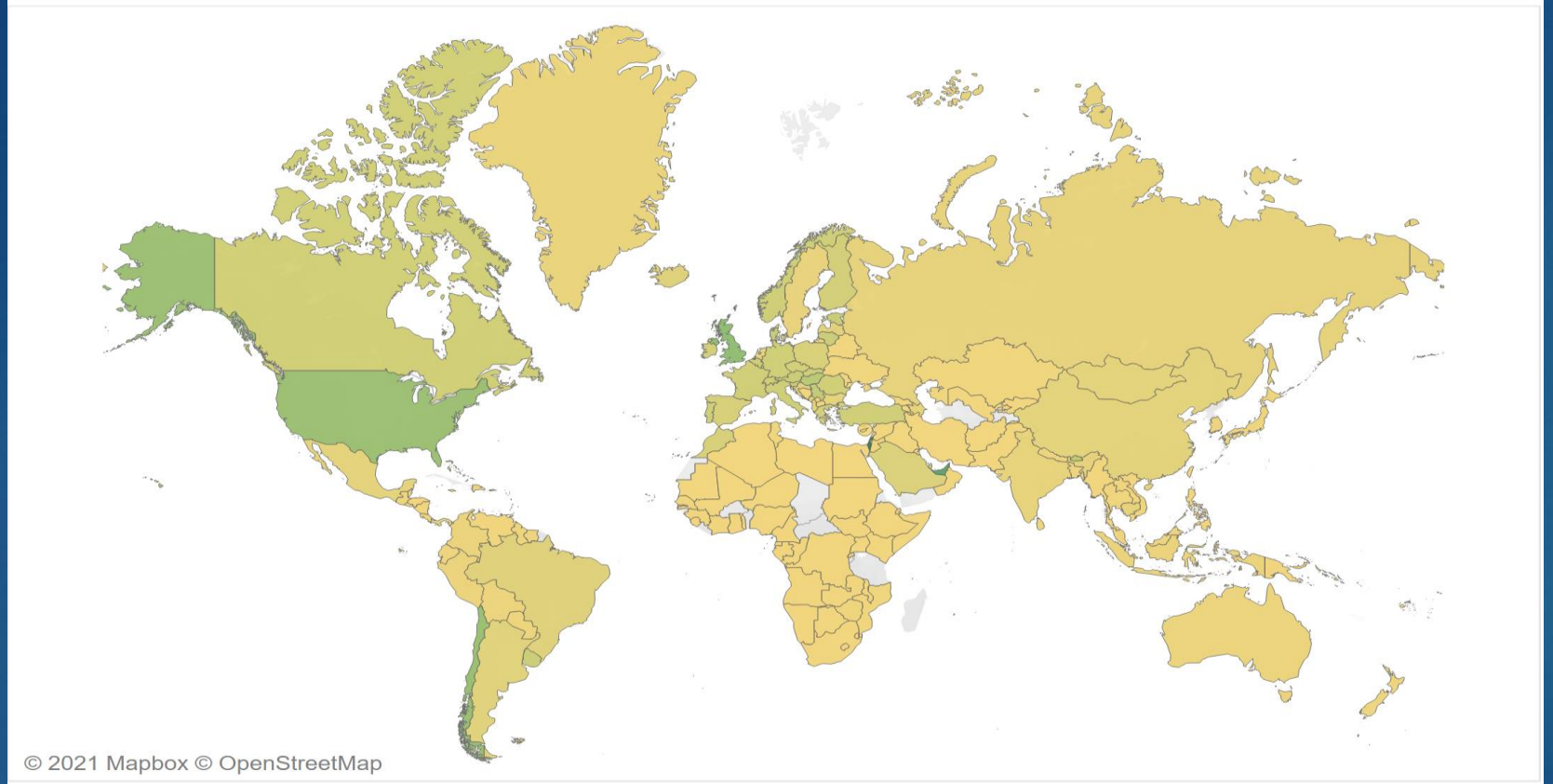
- Bi-LSTM was implemented on COVID-19 tweet dataset.

Results


Moderna
Pfizer
Sentiments
Negat..
Positi..
Count of Sentiments
Day of Date
Jan 1, 21
Feb 1, 21
Mar 1, 21
Apr 1, 21
Covaxin
Sinovac
Day of Date [2021]
Jan 1
Feb 1
Mar 1
Apr 1
Sputnik
Johnson


Total Vaccination counts
Tot Vaccinations
300M
200M
100M
0M
Vaccinations Per Hundred
Vaccinations Per Million
10K
5K
0K
Fully Vaccinated Per Hundred
Jan 1, 21
Feb 1, 21
Mar 1, 21
Apr 1, 21
May 1, 21
Day of Date
The trends of sum of Total Vaccinations, sum of Total Vaccinations Per Hundred, sum of Daily Vaccinations Per Million and sum of People Fully Vaccinated Per Hundred for Date Day. Color shows details about Country and Vaccines. The view is filtered on Country, which keeps 6 of 195 members.
Country, Vaccines
Brazil, Oxford/AstraZeneca, Sinovac
China, Sinopharm/Beijing, Sinopharm/Wuhan, Sinovac
England, Moderna, Oxford/AstraZeneca, Pfizer/BioNTech
India, Covaxin, Oxford/AstraZeneca
Italy, Johnson&Johnson, Moderna, Oxford/AstraZeneca, Pfizer/BioNTech
United States, Johnson&Johnson, Moderna, Pfizer/BioNTech

Total Vaccinations per Hundred



Map based on Longitude (generated) and Latitude (generated). Color shows sum of Total Vaccinations Per Hundred. Details are shown for Country. The view is filtered on sum of Total Vaccinations Per Hundred, which includes values greater than or equal to 0.

Thank You!

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