

Sentiment Analysis on Covid-19 Vaccines

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Problem Statement

- 2021 marked the commencement of the COVID-19 vaccination drive.
- A plethora of vaccinations are now available in the market that'll help in the fight against COVID-19.
- There is a lot of stigma regarding the vaccines amongst the people.



Our Solution:

- We want to create a platform where the people can search up the name of a vaccine and get the general sentiment associated with it.
- We plan on doing to break the stigma associated with these vaccinations so that the people get to know the general opinion surrounding a vaccine.

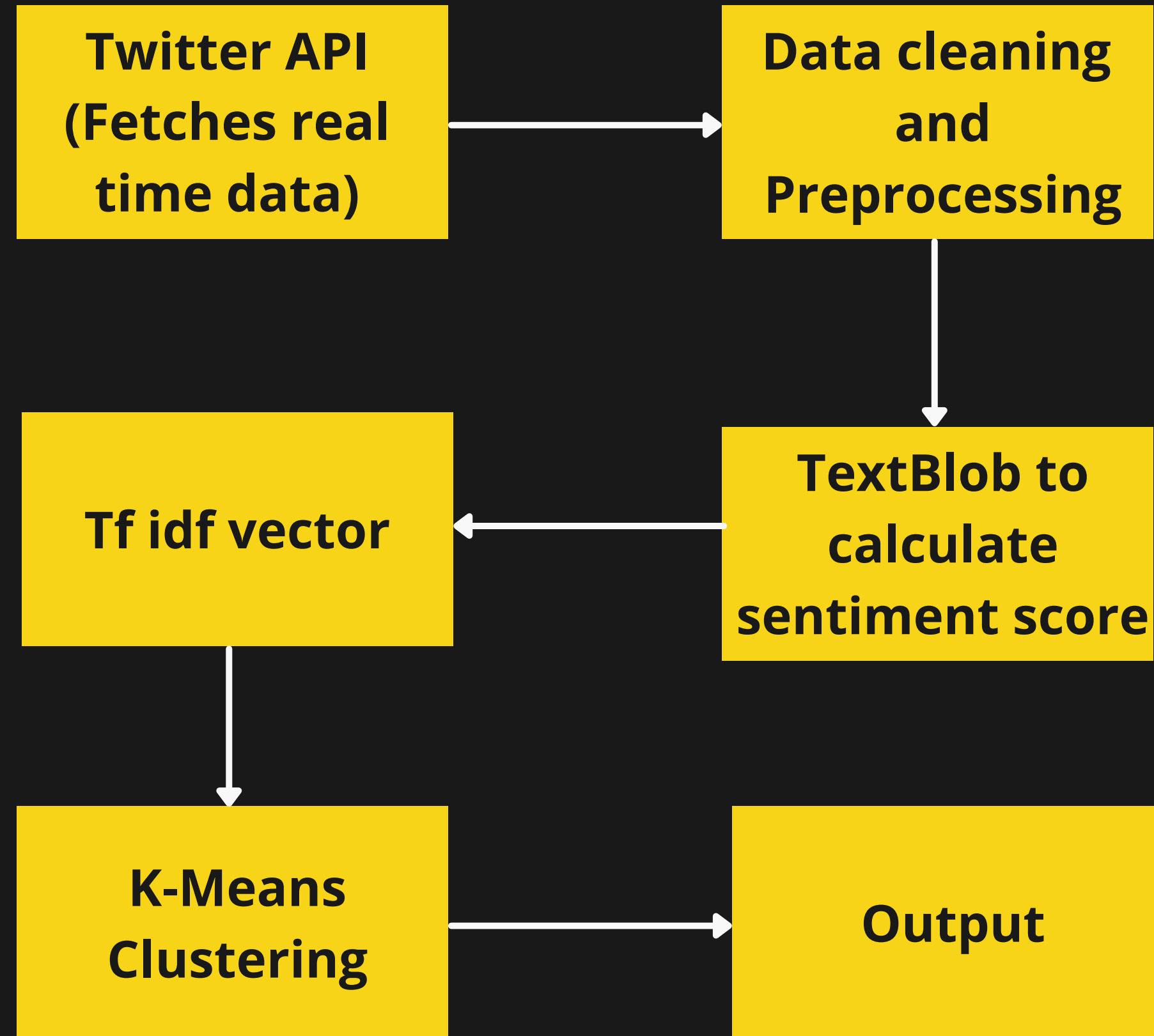


- It is an unsupervised Machine Learning Algorithm.
- Groups similar data points together and discovers underlying patterns.
- K-means looks for a fixed number (k) of clusters in a dataset.
- In our case, $k=3$ (positive, negative and neutral clusters).
- Every data point is allocated to each of the clusters through reducing the in-cluster sum of squares.

K-Mean's Clustering Algorithm

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Block Diagram





Implementation Tools

► Tech Stack Used

- Python
- Jupyter Notebook
- HTML, CSS, JavaScript
- Flask

► Packages

- Pandas, Numpy, nlkt (NLP Toolkit) , re (Regex Expression), matplotlib, vaderSentiment, sklearn.

► APIs Used


- Tweepy
<https://www.tweepy.org/>




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Current Status of The Project


We have successfully implemented the model using K-Mean's clustering algorithm to classify the Tweets into the 3 clusters.



These 3 clusters can be further broken down into Pie Charts to give a better idea to the users regarding the sentiment surrounding a particular vaccine.



We have deployed our website by integrating it with our model.



Conclusion

- We successfully implemented a model on Sentiment Analysis for Covid-19 Vaccines using unsupervised learning.
- We learnt about the K-Means clustering algorithm to implement our model.
- We integrated our model with a web app using Flask and deployed the same.
- We got familiar with various Python libraries and utilized the same for our project.

References

K. P. Sinaga and M. Yang, "Unsupervised K-Means Clustering Algorithm," in IEEE Access, vol. 8, pp. 80716-80727, 2020, doi: 10.1109/ACCESS.2020.2988796.

M. Capo, A. Perez and J. A. A. Lozano, "An efficient Split-Merge re-start for the K-means algorithm," in IEEE Transactions on Knowledge and Data Engineering, doi: 10.1109/TKDE.2020.3002926.

T. Handhayani and I. Wasito, "Fully unsupervised clustering in nonlinearly separable data using intelligent Kernel K-Means," 2014 International Conference on Advanced Computer Science and Information System, Jakarta, Indonesia, 2014, pp. 450-453, doi: 10.1109/ICACSYS.2014.7065891.



Thank You

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