October 25-26, 2023
Faculty of Computer Engineering,
University of Isfahan

The 7th International Conference on Internet of Things and Its Applications

Investigating the Impact of COVID-19 on Education by Social Network Mining

University of Isfahan | Ferdowsi University of Mashhad

The 7th International Conference on Internet of Things and Its Application

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Paper Title

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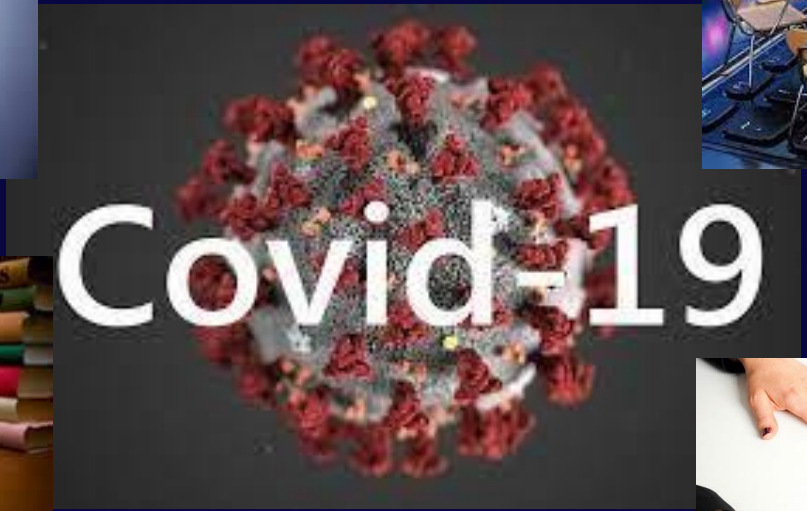
Introduction



Related Work

Title	Dataset	Domain
Twitter sentiment analysis on worldwide COVID-19 outbreaks	500,000 tweets	**COVID-19**
Mining Twitter Data on COVID-19 for Sentiment analysis and frequent patterns Discovery	653 996 tweets	**COVID-19**
Navigating 'Home Schooling‘ during COVID-19: Australian public response on Twitter	10,421 tweets	**COVID-19 & Home Schooling**

Proposed Method

The purpose of this study is to analyze Twitter users' feelings about the impact of the Covid-19 virus on education. To this end, a large number of tweets related to Covid-19 have been considered. Using the dictionary-based method, we extract the tweets related to education and obtain their location. Finally, we analyze the extracted tweets to identify positive and negative sentiments in terms of users' emotions.

Proposed Method

- **Data collection**

- between March 23 and June 23.
- keywords "corona", "coronavirus", "covid", "pandemic", "sarscov2," and "covid-19"
- We compile a list of place names using the GeoNames geographic database, including the names of states, provinces, and cities in a list of 32 countries selected based on the prevalence of the Covid-19 virus.

Proposed Method

- **Thematic extraction of tweets**

- we use a dictionary-based method to extract tweets related to education.
- Oxford dictionary to create an education lexicon.
- Finally, the vocabulary of the educational dictionary is reduced to 134 words.
- With the help of this dictionary and the implementation of a GATE pipeline, we extract tweets related to education.

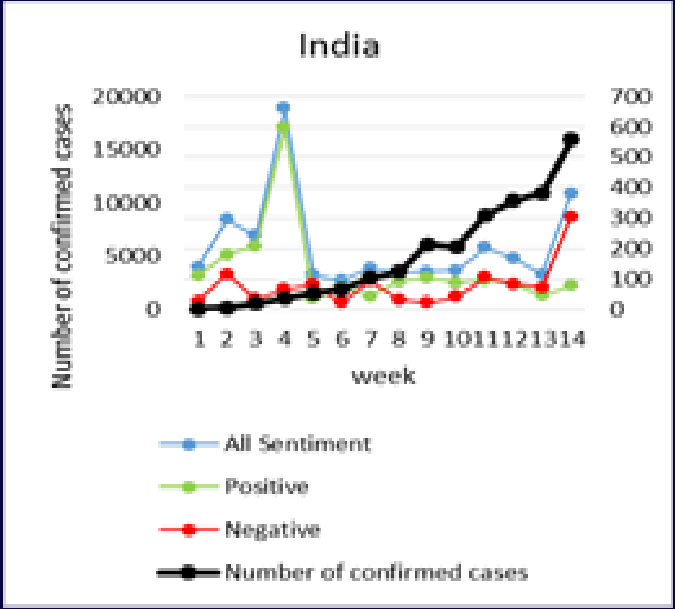
Proposed Method

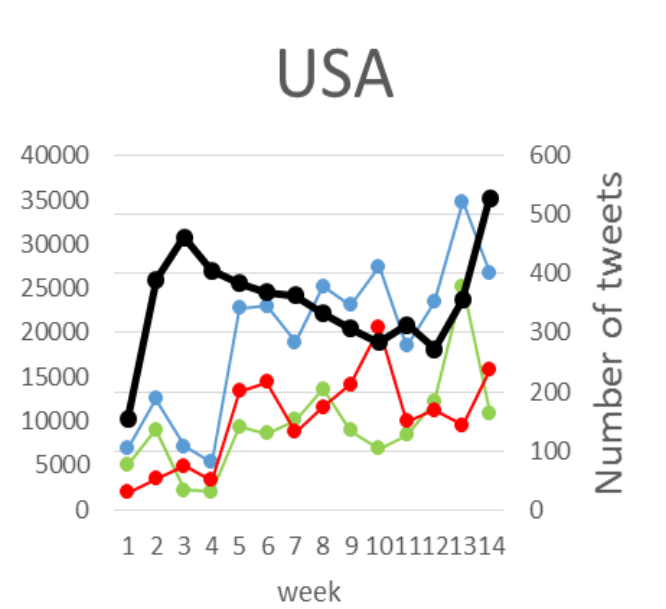
- **Sentiment analysis**

- We propose an emotion classification model based on the RoBERTa language-based model.
- Once we have obtained the sentiment score of the tweets using the RoBERTa language-based model, we can calculate the frequency of positive and negative tweets per week for each country.
- In this way, we can get temporal information about the opinions of people in different countries about the Covid-19 virus and the field of education.

Results

Frequency of all, positive, and negative tweets and official COVID-19 cases for several countries





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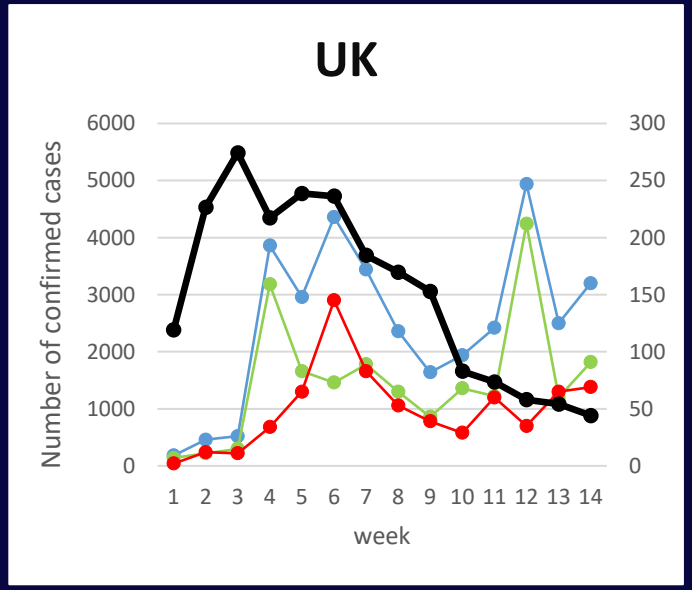

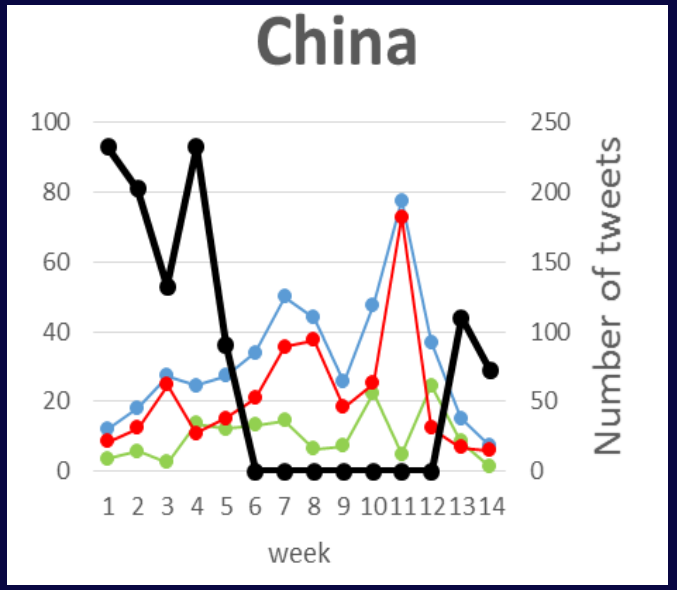

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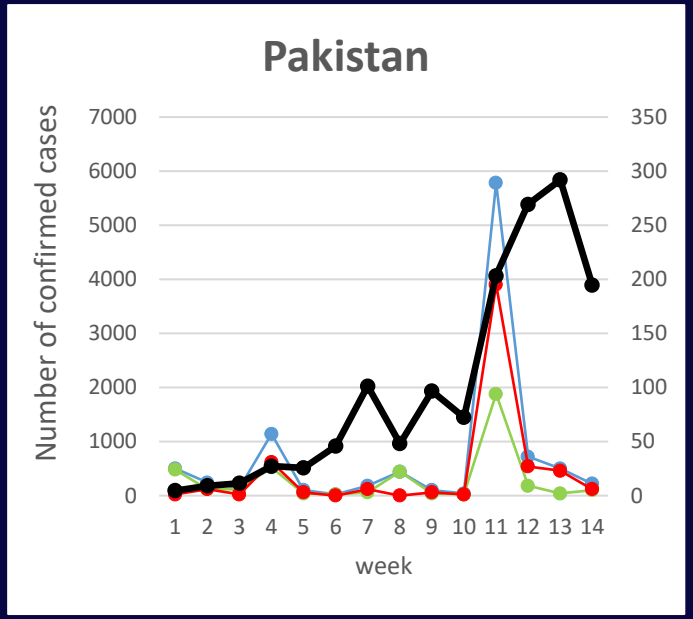

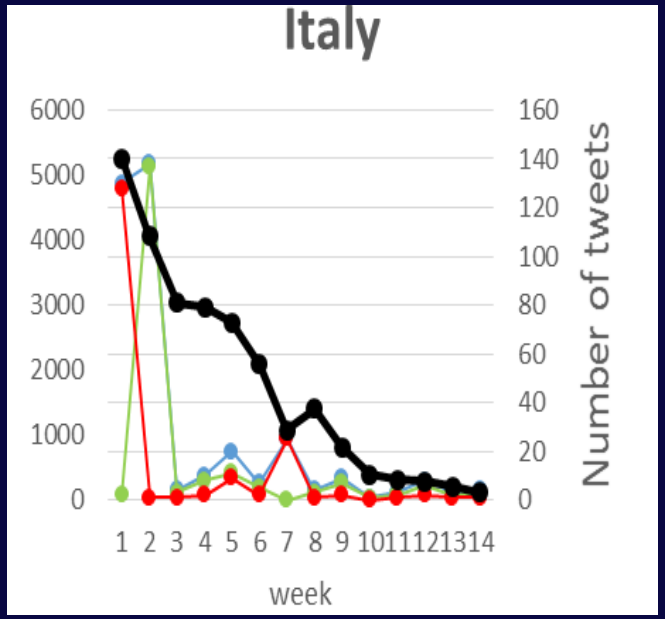

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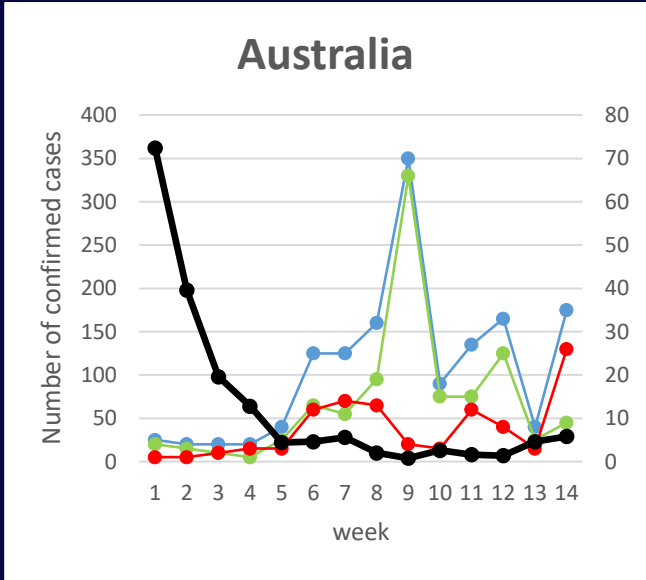

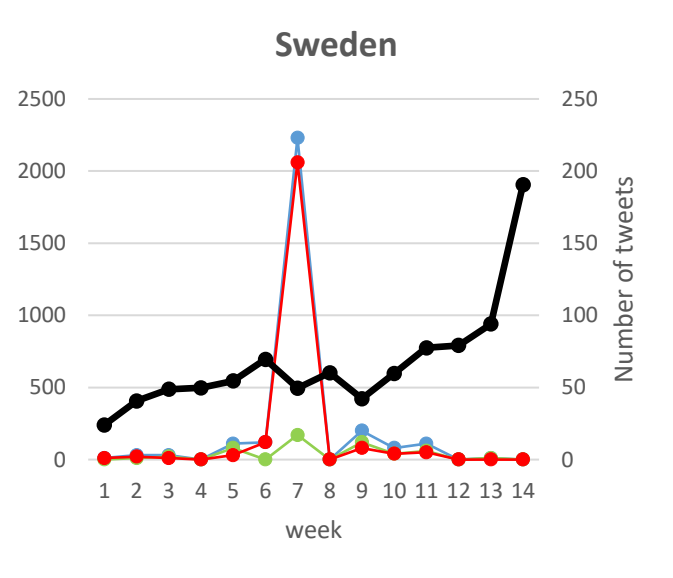

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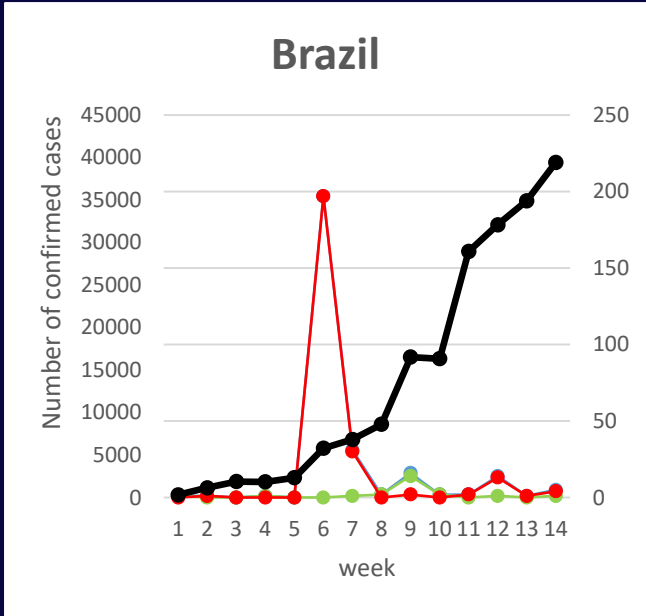

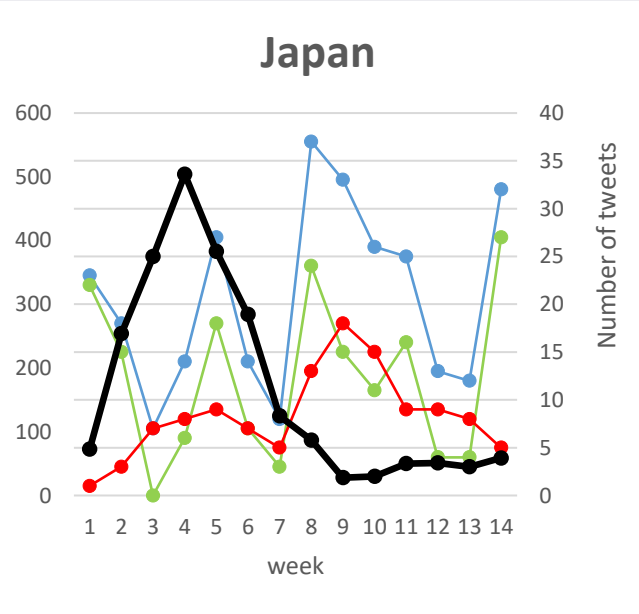

Conclusion

- Comparing the frequency trend of all the tweets with the official statistics curve of Covid-19 reveals that there is a correlation between these two curves for some countries, such as the USA and Pakistan. Besides, it can be seen that in India and Italy, the number of negative tweets increased at the peak of the official statistics of the Covid-19 virus. Also, the number of positive tweets is high when the official statistic becomes low.

- It is also seen that in some investigated countries such as Australia, India, UK, and Italy, on average, the number of positive tweets is more than negative tweets, while in other countries such as China, Pakistan, and the USA, the average number of negative tweets is higher than the number of positive tweets.

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Thanks

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