

Paper Title : Deep Sentiment Classification and Topic Discovery on Novel Coronavirus or COVID-19 Online Discussions: NLP Using LSTM Recurrent Neural Network Approach

Paper Link : <https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=9112671>

1. Summary

1.1 Motivation/Purpose : The COVID-19 epidemic has elicited significant public apprehension and discourse. In contemporary society, online forums and social media platforms have emerged as significant avenues through which individuals engage in the dissemination of information, the articulation of viewpoints, and the pursuit of communal assistance. Gaining comprehension of the emotion and subjects discussed within these conversations might yield useful insights into the prevailing public perspectives around the epidemic, hence facilitating informed decision-making in the realm of public health.

1.2 Contribution : This study introduces an innovative methodology for doing deep sentiment categorization and topic identification on online discussions related to COVID-19. The proposed strategy leverages the LSTM recurrent neural network. The approach suggested in this study demonstrates a sentiment classification accuracy of 81.15%, surpassing the performance of many established machine learning methods. Furthermore, the methodology employed in this study effectively discerns the prevailing subjects frequently deliberated in online debates pertaining to COVID-19. This approach yields significant insights into the worries and perspectives held by the general public.

1.3 Methodology : The approach that has been suggested comprises of two primary stages, namely sentiment categorization and topic finding. In the context of sentiment classification, a Long Short-Term Memory (LSTM) recurrent neural network is utilized to undergo training with the objective of classifying comments related to COVID-19 into three distinct categories: positive, negative, or neutral. Topic finding involves the utilization of a topic modeling method to ascertain the prevailing issues that are being deliberated in online discussions pertaining to COVID-19.

1.4 Conclusion : The suggested methodology offers a helpful instrument for comprehending public opinion and COVID-19-related subjects. The analytical findings have the potential to contribute valuable insights that may be utilized to enhance public health decision-making processes and optimize communication tactics in times of public health emergencies.

2. Limitations

2.1 First Limitation : The dataset utilized in this study is constrained to talks pertaining to COVID-19 sourced exclusively from social media platforms. This gives rise to apprehensions over the applicability of the results, as those who utilize social media may not accurately reflect the broader population. Furthermore, it is worth noting that social media debates have the potential to exhibit bias towards specific groups or opinions.

2.2 Second Limitation : The study only employs a solitary natural language processing (NLP) technique for the purposes of topic modeling and sentiment categorization. This constraint restricts the capacity to conduct comparative analyses of various natural language processing (NLP) techniques and evaluate the reliability and resilience of the outcomes. Moreover, the selection of the natural language processing (NLP) technique might potentially impact the outcomes of the analysis.

3. Synthesis/ Future work:

- Replicate the study with a larger and more diverse dataset
- Investigate the use of other NLP methods for topic modeling and sentiment classification
- Explore the use of deep learning models for topic modeling and sentiment classification
- Analyze the temporal evolution of public sentiment and topics of discussion
- Investigate the impact of public sentiment and topics of discussion on public health outcomes