

Studying the Impact of Social Media Algorithms on the Spread of Misinformation and its Effects on Society

Siddhesh Chalke and Deepak Mishra

Institute of Distance and Open Learning, Mumbai, Maharashtra, India

Abstract: *Social media contain with a large amount of data and this large amount of data is filled with a misinformation, which forward mislead to make unusual wrong decision by the public, creates mostly negative public emotions, and leads to serious threats belongs to public safety and social order. The spread of misinformation on social networks has belongs to the Social media algorithms to become a widespread among scholars. After the study, we see that raw misinformation spread on social media for the research product and compared it with the original information to better understanding of the characteristics of the spread misinformation on social networks. This study declares that a deep learning method to perform information content analysis and information emotion analysis on misinformation dataset with original information and to adopt an analytic process to analyze network with the difference between misinformation and original true information in terms of diffusion network characteristics. The research indicates that the spread of misinformation on social media is by feature content and different emotions with consequent different changes. The related overall research findings follows the existing research for make a certain valuable contribution to the governance of raw misinformation and the maintenance of network order responsible to original information.*

Keywords: Social Media, Fake News, True News, Misinformation, Algorithms

I. INTRODUCTION

On social media platform, Misinformation is an objective for social news that appears in the social operational environment. It usually refers to the fake news like information that is widely spread intentionally or unintentionally without a conformation for a factual basis. So it has been concern for not only in the social science for sociology and other fields of research like journalism but also in computer science with other fields. With development of technology of internet and social media platforms, the fake information spread by mouth-of-word is rapidly spread between through the social media platforms and has the characteristics of diffusion, fast propagation speed for spreading information, wide range for influence, deep impact. From cascading news and very sensitive information, the fundamental of principles are within the embedded in the concepts of truth and as well as the theories of communication respect to accuracy. Large number of Rumors, fake news, disinformation are the main coming challenges confronting for media of all types. In media, however, the worse case is of digital media, especially on social media platforms. The speed of information fusion diffusion, ease of access and use and difficulty in correcting fake information to make control of information which is undesirable for a horrid task. Along with these challenges, the social media has also been highly harmful in spreading timely and unnecessary or useful information.

Objectives :

Unintentionally-Spread Misinformation :

Some fake news or misinformation is unintentionally spread to devices of recipients with regular and begins users contribute to the spread of propagation due to their trust on the information sources, such as their relatives, close friends, office colleagues or social media influencer users. Instead of checking that misinformation, they usually try to inform on their social network close friends in that situation. For example, widespread of misinformation about Corona in 2020.



Intentionally-Spread Misinformation :

Some fake news or misinformation is intentionally spread to devices of recipients with having triggered the intensive discussion about information and fake news. There are many writers and groups of spreaders behind the propagation speed for the popularity of fake news, which has clear agenda and goal to complete and promote the fake news or misinformation. The most typical examples of intentionally-spread fake news include those components, rumors and misinformation that were trending during any elections. For example, In 2020, COVID-19 misinformation about misconstrued about understanding of the harmful disease.

Fake News :

Fake news is a news that intentionally-spread misinformation which is related to the format of news. By the study of recent incidents reveals that misinformation can be use for get viral in news media or social media through many of the platforms.

Unverified Information :

The unverified information is also comes under the misinformation, sometimes it can be true and original news which is accurate. But some times its not verified so it becomes false. A little piece of random news information can be defined as unverified information before its going for the verification. Those verified news also to be false sometimes when it inaccurately belong to the misinformation. It seems to be similar effects like due to other types misinformation, such as hatred, fear and astonishment.

Rumors :

Rumor is always unverified information that can be sometime true or sometime false. For example, the true rumors is about deaths of famous actors before they died or after the dead which is not declared yet in the social media platforms or in the media news.

Spam :

Spam is isolated information that spreads unfairlyoverwhelms to its recipients over social media network. It found on various social media platforms which includes instant messaging apps, spam emails and social media. For example, cyber crime is one of the best example where we gets fake links on social media or fake spam emails in the inbox from unknown source.

Troll :

This is another kind of fake news or misinformation that focus on is called troll. Troll is mainly aims to cause disturbing and argument words towards a group of certain peoples. For example, fans trolling Naveen-ul-Haq for arguments with Virat Kohli on social media.

Hate speech :

Hate speech is mainly refers to very abusive content which spreads on social media that targets towards a group of certain peoples, by expressing threatening and prejudice. For example, the Hate speech is gets viral between Gambhir and Kohli during the recent season of IPL after the match in 2023.

II. RELATED WORK

Misinformation in Social Media Network

The unverified or unclarified news are very common thing on the social media, and the study shows that attempted to conceptualize to unverified messages from the different locations. Common key factors includes are misinformation, fake news, rumors, disinformation. From all of them disinformation, misinformation and fake news are emphasize the false information and spot the object of information that has been failed. Disinformation is mostly to be deliberate tampering of true information to count benefits or advantages to spread that information. This similar disinformation isa fake news which is used to dismantle false information and stories for the guise of real sources of economic or political gain on social media network. Rumor is little bit different from the last three concepts. Also the rumor is also unverified information, it is need not always be false information, as well as it can be correct information in some conditions where the dissemination and intentions of the rumors are unknown. Spread of fake news or misinformation on social media network has always been very important topic for research. But before understanding why fake news or misinformation can spread on social media network, we have know the clear understanding regarding to the misinformation. One of the main reason is why misinformation is concerned to be important by researchers which lies in the wrong way towards nature of misinformation. Misinformation often misleads to make decisions for public, causes from corresponding actions and generates psychological and emotional factors. In addition, some of the studies have been analyzed for the factors that influence about the spread of misinformation on social media network.

Misinformation and Content Analysis :

Social media network has become an important mode for public to communicate and relevant information to obtain by virtue of its unlimited access. However, due to lack of supervision which is online and user anonymity, the main line between the true information and fake news which is not always easy to difference, which makes public for the face among them and misled towards accessing relevant important information. And, the unique chamber of social media platforms which allows design people with a common goal for information to gather some together. Although that some facilitates communication is in the same situation and increase possibility that public will have gain to the correct information they need, And it also simplifies the main negative impact of misinformation. Another study conducted regarding the content analysis on the fake news about COVID-19 and shows that only 38% of misinformation regarding COVID-19 on social media network was completely false, most of the fake news was created for distorting and falsifying the correct information. The related findings confirm that the current situation of integration and confusion of misinformation and original information on social media platform, which can help peoples to understand about evolution

III. METHODOLOGY

This research paper shows that misinformation as the research object and compare with the network structure of fake news and original information on social media platform is better to reveal evolution and diffusion law of misinformation on social platforms. It provides a logical reference for the public reactions or opinion on management of fake information. Following are the methods which are commonly used for the study of misinformation:

3.1 Network Analysis Method

The research paper method for analyzing the network analysis has been used in disciplines categories. The most well-known is network analysis methods which are belongs to the social media network analysis method, this is a combination of various methods and tools used for studying relationships, communication and interactions, and adopted by a number of researchers. In social media network analysis method, we describe the connection between the people on the social media network through the bridge of nodes and edges. Nodes are defined as groups or individual persons

which are connected in a circuit by the edge representation related to relationships to form a social media network graph. By using social media network analysis method we can identify and understand the relationship between users in social networks.

3.2 Content Analysis Method

The content analysis method is used to analyze the data on social media and summarize that data into the form of misinformation and original or true information. First, we done data preprocessing, to manage or reduce noise interference and for further of the data for this paper. And we also used TF-IDF method to convert text keywords based on the words. By the frequency of words in the corpus and text, we convert 20 most important keywords in the text using TF-IDF method. In content analysis method we need to extract some of the features according to the relationship with other words and various words in environment and then transform into feature vectors.

3.3 Sentiment Analysis Method

The expansion of social media network is built on social media platforms, the sentiment analysis method plays an important research field role in NLP(Natural Language Processing) and Text mining. The identification and analysis of sentiment comments, opinions and other text form in the social media network corpus is done through sentiment analysis. It provide support for understanding of the data dissemination pattern of information on social media platform.

IV. RESULTS AND DISCUSSION

4.1 Data Collection and Preprocessing

For this research paper, we chose the dataset of the Webio platform for our analysis object which is large and open-source. Webio is most popular social media platform, it has around 500+ active users with large online social network, and also provides large data sources to investigate about the spread of misinformation on social media platform networks. We obtained the useful content and information for 2 datasets, one is for misinformation and other for true information. Both the information is were show at the same time, which is useful for public attention and had been proved to be true. The following table shows dataset details of misinformation and true information :

Descriptive analysis	True information	Misinformation
Tweets	2351	2313
Retweets	1717264	2093056
Maximum forwarding relationship	52158	59319
Minimum forwarding relationship	12	11
Average forwarding relationship	730	905

4.2 Topic Categories of True information and Misinformation

With the help of obtained dataset of True information and Misinformation, we divided the data by using clustering method in 7 categories and guess the topic tag and content of every category with the relevant information content. The following table shows dataset of topic categories for Misinformation and true information:

Topic Type	Topic Content	True Information	Misinformation
Public security	Information related to public Security on social media	145	259
Food and product	Information related to the diet or type of product	1618	1430
Politics	Information related to political events, politicians	74	87
Celebrity	Celebrity information	26	9
Crime	Related information on criminal events and people	269	358
Disaster	Information related to natural disaster or accidents	79	49
Social events	Involving a strong social response, biased towards folk tales	78	84

V. CONCLUSION

The conclusion section summarizes the key findings of the research and emphasizes the importance of studying the impact of social media algorithms on the spread of misinformation and its effects on society. Social media has not only main platform for searching true information but it also contributed to the spread of fake or misinformation in social media networks. The spread of misinformation on social media networks misleads the people and directed them to take wrong decisions. First it is important to understand the characteristics of misinformation or fake information on social media platforms. Social media algorithms not only provide reference for misinformation in social media platform but also maintain the order of misinformation for network security. Related studies have found different types of misinformation and true information available on social media network. In content analysis, there is a differences in between network distribution and diffusion of fake or misinformation. In emotion analysis, we found that emotions plays important factor role for indicating the spread of misinformation and the another process of spread of fake news in social media networks showed different changes due to the change in different emotions. So, in the future, we will refer further deep research based on this research paper and accept different methods and datasets to better response to the propagation pattern of fake or misinformation in social media networks.

REFERENCES

- [1] Abouzeid, A. Granmo, M.(2021). Learning concept of misinformation mitigation via Hawkes processes. Information systems frontiers
- [2] W.R.O. (2020). Technical Guidance on COVID-19 in the World Health Organization (WHO).
- [3] Algorithmic detection of disinformation and misinformation: Documentation journal, 2017.
- [4] C. Huimin, "Quantitative analysis on COVID-19 related to social media platform rumors", 2021.

BIBLIOGRAPHY

Mr. Siddhesh V. Chalke has completed Bachelor's in Computer Science from K. V. Pendharkar College, Dombivli, affiliated to University of Mumbai in 2020, Currently he is pursuing MCA from Institute of Distance and Open Learning and having Spatial Data Specialist experience in Here Technology Pvt. Ltd. from July 2021 to Mar 2022.

Mr. Deepak B. Mishra has completed Bachelor's Science in Information Technology from S.I.A College, Dombivli, affiliated to University of Mumbai in 2021, Currently he is pursuing MCA from Institute of Distance and Open Learning and having 2 years of experience in IT. Currently working with Vidyalankar Group as a Senior Web Developer.