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Gautam Kishore Shahi and Tim A. Majchrzak

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Gautam Kishore Shahi, Tim A. Majchrzak
gautam.shahi@unidue.de, timam@uia.no
University of Duisburg-Essen, Germany, University of Agder, Norway

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Extended Abstract

Introduction With over a year of the COVID-19 pandemic – likely the defining global health crisis of our time [5], misinformation about symptoms, vaccines and infection rates is rife. In this study, we investigated the authors, content and propagation of this *infodemic*. Using data from over 92 professional fact-checking organizations united as the International Fact-Checking Network (IFCN) from January to July 2020, we analyzed 1 500 false and partially false tweets spread misinformation. Misinformed citizens may take decisions that will delay the mitigation of the crisis or might even have a direct adverse effect [1]. The results of our exploratory work shed light on the spread and some characteristics of misinformation and typically used emojis and hashtags. Moreover, we have been able to describe the first set of recommendations that specifically address the role of authorities.

In the following section, we describe the data we used, which methods we applied and which results in we found. Based on these, we conclude and propose future work.

Data For our study, we gathered data from two different sources. The first data set consists of false and partially false tweets from fact-checking websites. The second is a random sample of tweets related to COVID-19 from the same period.

Dataset-I We used an automated approach to retrieve tweets with misinformation. First, we collected the list of fact-checked news articles related to the COVID-19 from Snopes and Poynter from 04-01-2020 to 18-07-2020. We collected 7 623 fact-checked articles using the approach mentioned by Shahi [2, 4].

Dataset-II To understand how the misinformation around COVID19 is distinct from the other tweets on this topic, we created a background corpus of 163 096 English tweets spanning the same period as our corpus of misinformation.

Methods We follow a two-way approach. We first analyze the details of user account involved in misinformation and the spread of misinformation (false or partially false data). Then, we analyze the content. With both, we investigate the propagation of misinformation on social media.

To better understand who is spreading misinformation on Twitter, we investigated the Twitter accounts behind the tweets. First, we analyze the role of bots in spreading misinformation by using a bot detection API to classify accounts of authors automatically. Similarly, we analyze whether accounts are brands using an available classifier. Third, we investigate some characteristics of the accounts that reflect their popularity (e.g. follower count, favourites count, account age etc.).

To analyze what misinformation around the topic of COVID-19 is circulating on Twitter, we investigate the content of tweets. Due to the relatively small number of partially false claims, we combined the data for these analyses. First, we analyze the most common hashtags and emojis. Second, we investigate the most distinctive terms in our data to better understand how COVID-19 misinformation differs from other COVID19 related content on Twitter.

Table 1: Description of twitter accounts and tweets from Dataset I(Misinformation) and Dataset II (Background corpus)

Dataset	**I**	**II**
Number of Tweets	1 274/226(1 500)	163 096
Unique Account	964/198(1 117)	143 905
Verified Account	727/131(858)	16 720
Distinct Language	31/21(33)	1(en)
Organisation/Celebrity	698/135(792)	16 324
Bot Account	22/2(24)	1 206
Tweet without Hashtags	919/147(1 066)	134 242
Tweet without mentions	1 019/176/(1 195)	71 316
Tweet with Emoji	168/20/(188)	14 021
Median Retweet Count	165/169(165)	8
Median Favourite Count	2 446/3 381(2 744)	9 695
Median Followers Count	74 632/69 725(74 131)	935
Median Friends Count	526/614(531)	654
Median Account Age (d)	82/80(82)	108

Table 2: Top 10 most informative terms in misinformation tweets compared to COVID-19 background corpus

False Claims	**Partially False Claims**
social medium	fake news
circulating on social	mortality rate
social network	mild criticism
fake news	join the homage
not	several voitur
corona virus	human-to-human transmission
medium briefing	bay area
world health organization	santa clara
ministry of health	latest information
circulating	situation report

Results We discovered 24 bot accounts out of 1 187 unique user accounts. We have identified 792 accounts as a *brand*. For example, user ID 18815507 is an organization account, while user ID 2161969770 is a representative of UNICEF. Many of the most commonly used hashtags in COVID-19 misinformation concern the coronavirus itself (i.e. #covid19 and #coronavirus) or stopping the virus (i.e. #stopcorona and #komeshacorona). Users commonly used emoji-like Attract attention (loudspeaker, red circle), Convey distrust or dislike (down-wards arrow, cross) or danger (warning sign, police light) Mock (laughing face in reaction to the announcement). A glimpse of the account features and content analysis are given in table 1 and 2.

We also found a difference in the terms used in the false tweets and partially false tweets. The informative terms on false tweets were concerned over the spread of COVID-19 information over social media. In contrast, the partially false were discussed the impact of COVID-19 like mortality rate, human to human transmission. Interestingly both discuss fake news. Overall, It appears authors make use of emojis to attract attention to their claim (loudspeaker, red circle)

and to convey distrust or dislike (down-wards arrow, cross) or danger (warning sign, police light). In our data set, the thinking emoji is mainly used as an expression of doubt, frequently relating to whether something is fake news or not.

Conclusion and Future Work We presented the study on the need for clustering of misinformation into four categories (false, partially false, true and other) [3]. We also discussed the different spread of misinformation in a false and partially false category, along with content analysis and user characteristics. Interestingly false information catches more audience compare to partially false information. While we learned much about COVID-19 misinformation, many research gaps were identified. Lessons learned from tackling misinformation in this pandemic will prove helpful in future crises. Authorities ought to carefully follow social media and embrace their role as a trusted source of facts, gaining information sovereignty.

The future extension could study COVID-19 misinformation on cross-platform with different demographic. We have only analyzed the text, but it is also interesting to study the spread of multi-modal misinformation. Overall, misinformation, especially during the emergency, pandemic become deeper, so we have sufficient media literacy to solve it.

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