International Institute for Applied Systems Analysis
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Misinformation during natural and man-made disasters

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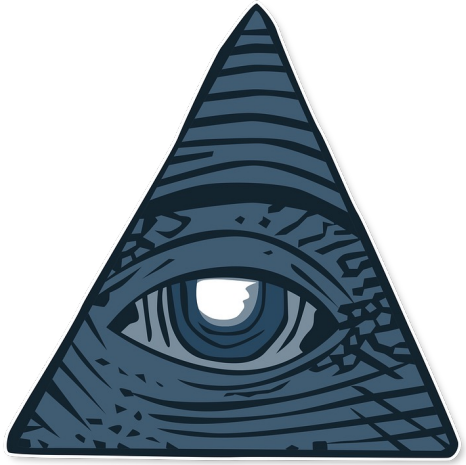
Understanding and combatting misinformation: Insights from diverse topics

Why Study Misinformation?

- In today's digital age, misinformation spreads rapidly across various online platforms.
- It influences public opinion, decision-making, and even public health.
- Understanding and combating misinformation is crucial for a well-informed society.

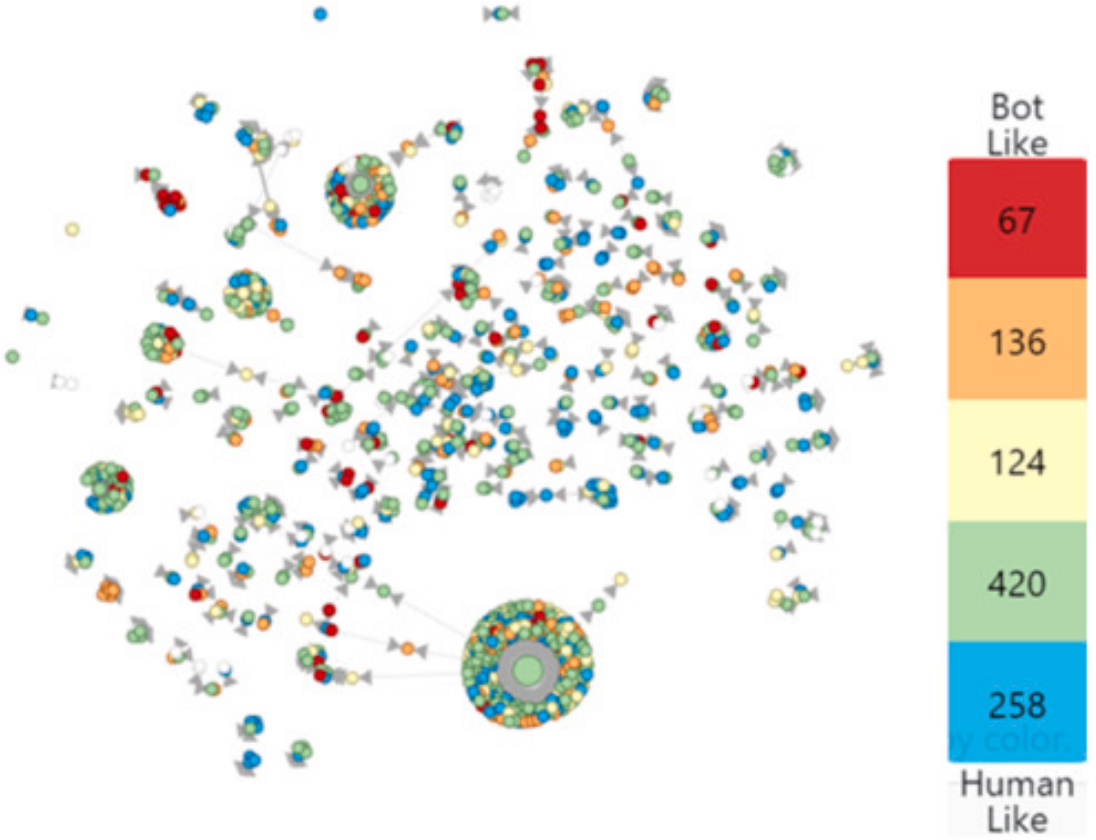


Exploring Different Aspects of Misinformation

- In this presentation, we delve into various aspects related to misinformation.
- We explore its role in different contexts, including earthquakes, monkeypox, COVID-19, and GMO discussions.
- We also examine the involvement of bots in spreading conspiracies.

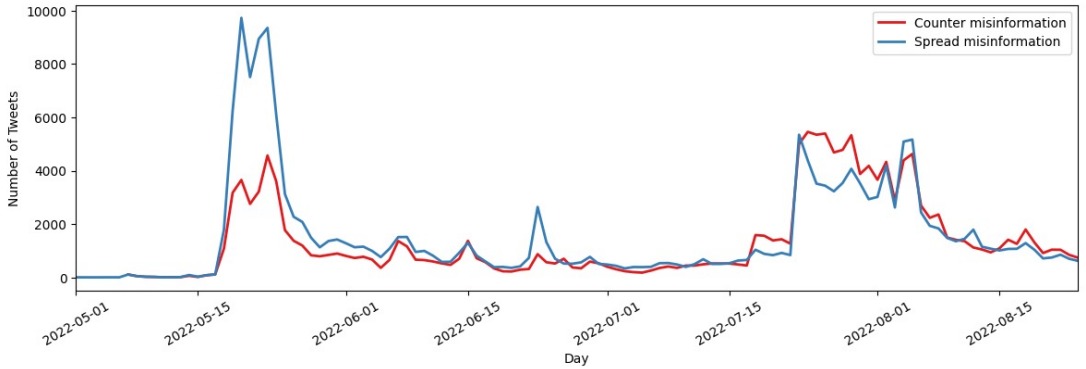
The role of bots in spreading conspiracies: Case study of discourse about earthquakes on Twitter

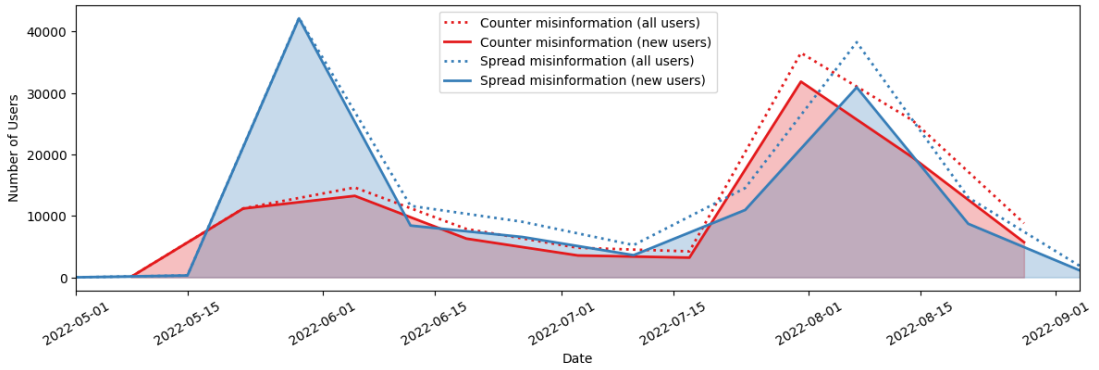
- Identified 7 widespread earthquake conspiracy discourses: military activities, divine punishment, aliens, HAARP, Large Hadron Collider, fracking, and freemasonic plots.
- Collected Twitter data after a major Indonesia earthquake (November 2022). Bot Sentinel for sentiment analysis and Botometer to distinguish bot-like accounts.
- Despite more human-like accounts, a positive correlation was observed between tweet frequency and bot scores, indicating active bot involvement.
- A positive relationship between bot scores and toxicity levels suggests bot-like accounts were more involved in disruptive activities.
- Erokhin, D., & Komendantova, N. (2023). The role of bots in spreading conspiracies: Case study of discourse about earthquakes on Twitter. *International Journal of Disaster Risk Reduction*, *92*, 103740. https://doi.org/10.1016/j.ijdrr.2023.103740



Mining the discussion of monkeypox misinformation on Twitter using RoBERTa

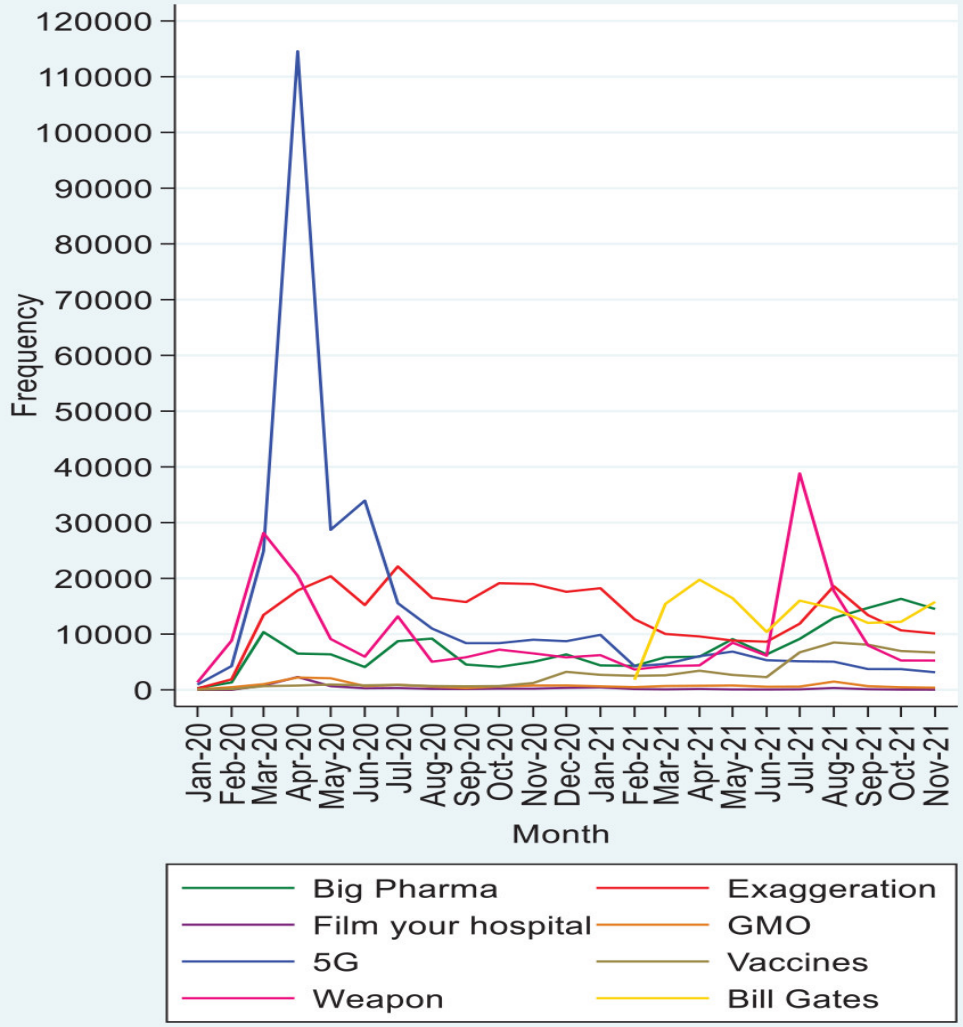
- Analyzed misinformation related to monkeypox on Twitter.
- Collected 1.4M tweets from 500K users, applying NLP methods for word and sentence embeddings.
- Trained ML classifiers and fine-tuned a RoBERTa model using 3K hand-labeled tweets.
- Categorized tweets into misinformation, counter misinformation, and neutral groups, examining behavioral patterns and domains used. Provided insights and policy recommendations for addressing misinformation in social media.
- Elroy, O., Erokhin, D., Komendantova, N., & Yosipof, A. (2023, June). Mining the Discussion of Monkeypox Misinformation on Twitter Using RoBERTa. In *IFIP International Conference on Artificial Intelligence Applications and Innovations* (pp. 429-438). Cham: Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-34111-3_36





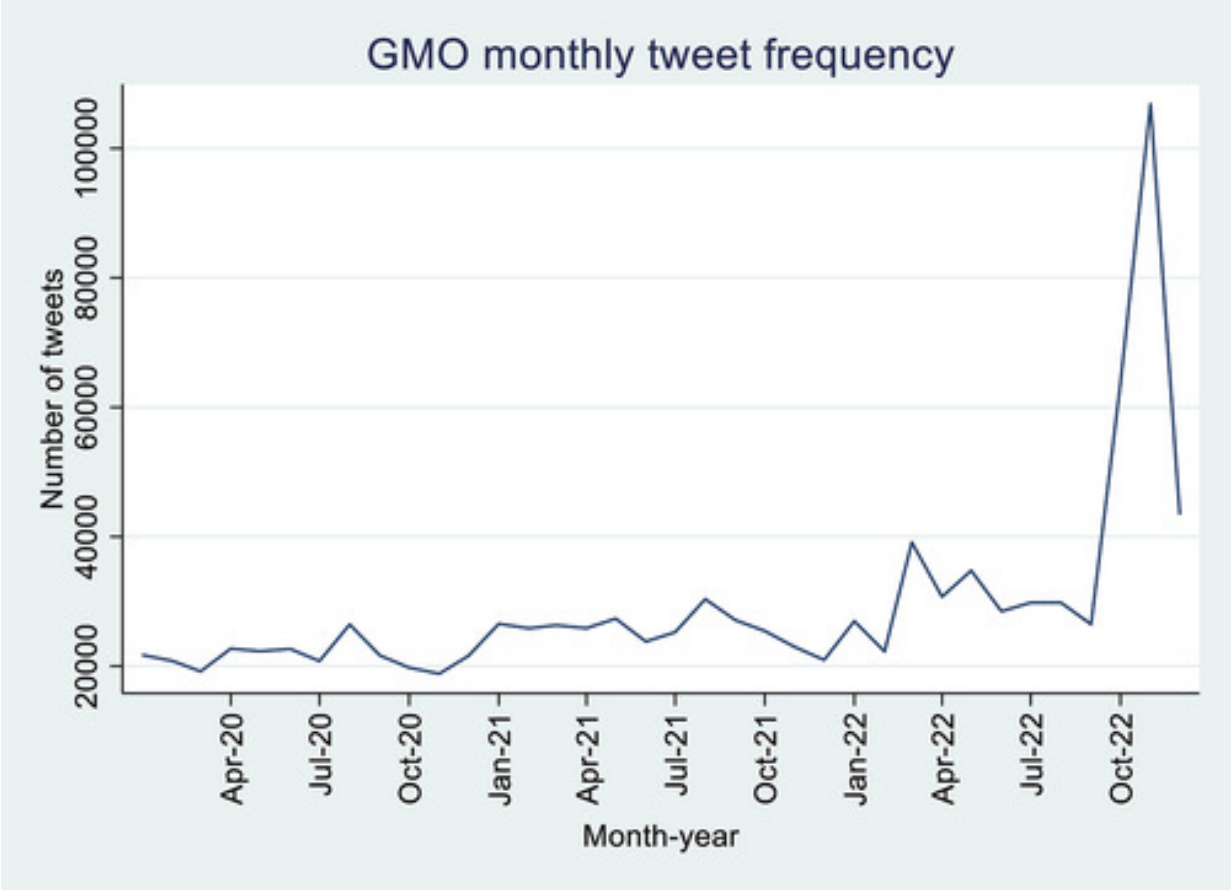
COVID-19 conspiracy theories discussion on Twitter

- Analyzed COVID-19 conspiracy theories on Twitter from January 2020 to November 2021.
- Collected 1.269 million tweets related to eight conspiracy theories.
- Categorized conspiracy theories into four distinct groups based on their evolution during the pandemic.
- Identified the number of COVID-19 new cases as a significant predictor for tweet frequency in most conspiracy theories during the pandemic.
- Erokhin, D., Yosipof, A., & Komendantova, N. (2022). COVID-19 conspiracy theories discussion on Twitter. *Social media+ society*, *8*(4), 20563051221126051. https://doi.org/10.1177/20563051221126051



GMO discussion on Twitter

- Analyzed discussions on GMO, focusing on misinformation and conspiracy theories on Twitter.
- Collected and analyzed 1,048,274 English tweets about GMOs from January 2020 to December 2022.
- Categorized tweets into negative (30.92%), neutral (21.65%), and positive (47.43%) sentiment.
- Identified four clusters of tweets associated with GMO misinformation: GMOs and vaccines, GMOs and COVID-19, GMOs and Monsanto, GMOs and Bill Gates.
- Erokhin, D., & Komendantova, N. (2023). GMO discussion on Twitter. *GM Crops & Food*, *14*(1), 1-13. https://doi.org/10.1080/21645698.2023.2241160



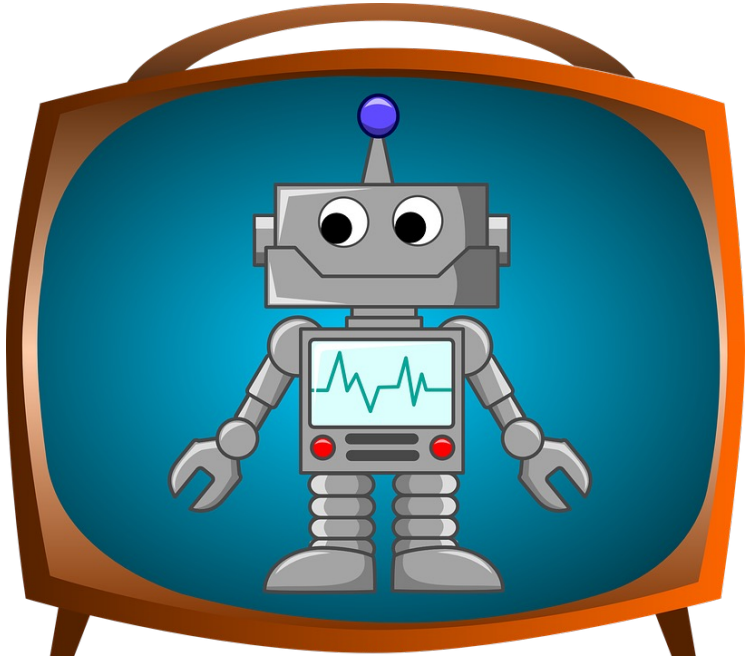
Contribution to the Global Digital Compact: “Digital commons as a global public good. Internet as a free space, and methods for combating the spread of disinformation and misinformation

- Held an online consultation to discuss the topic of “Internet as a free space and methods for combating the spread of disinformation and misinformation” and to prepare key principles and commitments as a contribution to the Global Digital Compact.

- Komendantova, N., Erokhin, D., Rovenskaya, E., Dallo, I., Fallou, L., Rapaport, C., ... & Yosipof, A. (2023). Contribution to the Global Digital Compact: “Digital commons as a global public good. Internet as a free space, and methods for combating the spread of disinformation and misinformation.”. https://www.un.org/techenvoy/sites/www.un.org.techenvoy/files/GDC-submission_IIASA.pdf

Conclusion

- **In Summary**
  - Misinformation is a pervasive issue with far-reaching consequences.
  - Our research sheds light on its presence in various domains and highlights the role of bots in amplifying it.
- **Collective Effort**
  - Addressing misinformation requires a collective effort from researchers, policymakers, and social media platforms.
- **Stay Informed**
  - Thank you for joining us in our exploration of misinformation. Together, we can combat its spread and promote informed discourse.



Thank you for your time!