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A meta-analysis of recent misinformation mitigation methods on respective domains and for each content-form

Xavier Babu
University of Massachusetts Lowell, xavier_babu@student.uml.edu

Julie Zhang
University of Massachusetts Lowell, juheng_zhang@uml.edu

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Research-in-Progress

Xavier Babu
Manning School of Business
University of Massachusetts Lowell
Xavier_Babu@student.uml.edu

Julie Zhang
Manning School of Business
University of Massachusetts Lowell
Juheng_Zhang@uml.edu

ABSTRACT

Misinformation is the spread of false information, especially on social media, regardless of whether there is intent to mislead. Disinformation, fake news and deepfakes are a subset of misinformation. Misinformation is distributed via popular social media networks. The spurious information can be related to health, politics, political party, propaganda, celebrities, conspiracies, news, religion, discrimination, commercial products, etc. In recent years, researchers have used many different machine learning and deep learning multimodal techniques to identify misinformation based on the content format and using additional data like user profiles and community groups. In addition, social media platforms also introduced many platform intervention policies, e.g., Facebook and YouTube. We started with 38,100 papers and 200+ relevant papers chosen finally from the online journal database by applying rules like the last five years' journals to analyze recent trends and research, focusing primarily on academic journals, including information systems and computer science journals (predominantly from IEEE) and rarely reviewed online news contents. Furthermore, we grouped them based on the domain and in each domain filtered further based on empirical analysis, laws and policies. Finally, empirical analysis papers are grouped based on monomodal/multimodal analysis and data representation. We have tabulated publicly available data sources, misinformation domains, modal types, applied detection methods, misinformation mitigation laws, and intervention policies incorporated by major social media platforms. Researchers who analyzed political misinformation indicated that evidence-based misinformation is more accurate than fact-free misinformation (Hameleers, 2022). Furthermore, they concluded that the combination of news media literacy interventions and fact-checkers is most effective in lowering issue agreement and perceived accuracy of misinformation across countries.

Most of the research articles focused on text to detect misinformation. For example, Tufail et al., 2022 proposed a fake review detection model using text classification and machine learning techniques. Hajek et al., 2022 proposed a review representation model based on behavioral and sentiment-dependent linguistic features that effectively exploit the domain context. Shim et al., 2021, proposed the link2vec model, an extension of word2vec, to represent the pattern of the links of the web search result of news for fake news detection. There are papers where the researchers focused on both text and visuals (images/audio/video) to detect misinformation. Song et al., 2021 proposed a multimodal fake news detection model based on Crossmodal Attention Residual and Multichannel convolutional neural Networks (CARMN). Shang et al., 2021 proposed a multimodal misinformation detection framework called TikTec. Cinelli et al., 2021 applied a hate speech deep learning model to a large corpus of more than one million comments on Italian YouTube videos and classified them. One example of misinformation mitigation law is the European Commission published the "Code of Practice on Disinformation". It constitutes an important step in the fight against the spread of online fake news within the EU (Lanza, 2020). An example of intervention policies is, on Facebook, disinformation disclosure intervention lets group admins know if a third-party fact-checker has rated content posted in their groups as false.

KEYWORDS

Misinformation, Fake news, Deepfakes, Disinformation, Machine learning, Deep learning, Multimodal, Social-media platform intervention policies, and Misinformation mitigation laws.

Full paper & References available upon request.