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Designing Credibility Tools To Combat Mis/Disinformation: A Human-Centered Approach

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ABSTRACT

Misinformation and disinformation are proliferating in societies compromising our ability to make informed decisions. Currently a myriad of tools, technologies, and interventions are designed to aid users in making informed decisions when they encounter content of dubious credibility. However, with the advancement of technology, new forms of fake media are emerging such as deepfakes and cheapfakes containing synthetic images, videos, and audio. Combating these new forms of fake media requires tools and interventions understanding the new context. In this case, designers and developers of these tools need to examine user experience and perspectives on new contexts and understand multidisciplinary view points before designing any tools. This workshop calls for multidisciplinary participation to interrogate the current landscape of misinformation tools and to work towards understanding nuances of user experience of these new fake media and perceptions of tools that support users to distinguish credible from inaccurate content. This workshop intends to solicit a human-centric design framework which can act as a UX design guideline when designing and developing tools for combating mis/disinformation.

KEYWORDS

Misinformation, User Experience, Human-Centered Design

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1 INTRODUCTION

Credibility tools are usually designed to detect and report mis/disinformation or provide indicators that help users make informed decisions about the media they consume. Although there are considerable number of tools available for the public, the amount of mis/disinformation circulating in the public media is concerning. Such proliferation of mis/disinformation may be due to the lack of awareness, media literacy, a lack of effective tools that detect misinformation on new topics or those that help consumers discern credible content from falsehoods, or because existing tools are not well equipped to deal with new and emerging forms of mis/disinformation such as deepfakes [3] and cheap fakes [5]. Researchers have been addressing these issues continually—designing and developing credibility indicators, understanding online behaviors and emphasizing changes to certain social media platforms to mitigate the spread of mis/disinformation [6], or proposing interventions that aid to reduce the creation and spread of harmful information [1]. The research tools in this line of research have incorporated for instance, credibility indicators differentiating true from false content using highly complex algorithmic backends, complex user interfaces that require higher cognitive action from users as an interaction [2], or simple nudges that help consumers come to the realization of which sources or contents are credible vs not on their own [4].

Many of the interventions and tools have targeted misinformation in text form; yet, currently many fake media contain images and videos, warranting fresh explorations on user perceptions in these newer contexts [7]. It is vital to understand the gap of the users experiences in these newer forms of fake media to help designers optimize effective tools catered to the users. Since these are highly dependent on the perceptions and behavioral patterns of the user, designing tools and interventions to combat misinformation is a complex task and needs multidisciplinary perspectives drawn from Cognitive Psychology, Human-Centered Design, Computer Science, Network science, and many more.

In this workshop, we will interrogate credibility tools from users' point of view and designers' points of view. We will understand the cycles and decisions behind designing credibility tools and also try to understand the user experience and perception of these credibility tools. The main objective in this to seek a framework to better design tools and interventions to combat credibility of information. We will provide space for designers and users where they both articulate their process of understanding misinformation.

We will create a road map which finetunes the balance between user experience and credibility tool design from a human-centered design perspective. As a main deliverable from this workshop, we intend to 1) empirically understand the gap between users' needs and how designers currently approach credibility tools 2) to solicit a credibility framework that designers can utilize in building effective credible tools agreeable to users. The outcome of this workshop will be specific guidelines for tool designers to make their credibility tools more effective.

2 ORGANIZERS

The organizing team of this workshop consists of experienced researchers affiliated with universities and working independently. Most importantly, the majority of the researchers represent the current UX Working Group of the Credibility Coalition, a research collective dedicated to understanding the role of UX design in fighting misinformation. Following are the core team members which will steer this workshop.

Dilrukshi Gamage is a postdoctoral researcher at the Sasahara lab at Tokyo Institute of Technology, Japan. Her postdoc research is centered to understand fake media and explore avenues to mitigate the spread of misinformation. She has been a community member at the Credibility Coalition and specifically been part of the UX working group at Credibility Coalition. She has experience in co-organizing five CHI workshops in previous years.

Bill Skeet is Chief Product Officer at NOBL Media and a veteran product design leader at media and networking technology companies. Prior to the web, he was an award-winning newspaper designer and graphic journalist. As Chief Designer at Knight-Ridder, he led the design and launch of 25 newspaper websites from 1995-1999. Following that, he has championed user experience at Juniper Networks and Cisco Systems, leading teams of designers, researchers, data scientists. He holds a Master's degree from the University of Kansas in Information Design and a bachelor's degree from the William Allan White School of Journalism (University of Kansas). Bill has been a core member of Credibility Coalition UX group for more than three years.

James Stomber is a UX Researcher and consultant working with Hacks/Hackers to lead the Credibility Coalition's UX Working Group's current research and data collection efforts. Recently, he completed an MSc at the Oxford Internet Institute, where he studied technological misinformation interventions. Prior to that, he completed a Bachelors in Brain & Behavioral Sciences at Brown University.

Farnaz Jahanbakhsh is a PhD student at MIT CSAIL advised by David Karger. Her research is on helping people navigate their information space with a focus on equipping them with tools that they can use to help themselves or their social circle better differentiate between credible and false or otherwise misleading content. Before joining MIT, she completed her Master's in CS at the University of Illinois at Urbana-Champaign (UIUC), and before that, her Bachelor's in CE at Sharif University of Technology in Iran.

Gautam Kishore Shahi is a PhD student in the Research Training Group User-Centred Social Media at the research group Digital Communication and Transformation (digicat) at the University of Duisburg-Essen, Germany. His research interests are Web Science,

Data Science, and Social Media Analytics. He has a background in computer science, where he has gained valuable insights in India, New Zealand, Italy and now Germany. Gautam received a Master's degree from the University of Trento, Italy and Bachelor Degree from BIT Sindri, India. Outside of academia, He worked as an Assistant System Engineer for Tata Consultancy Services in India.

3 WEBSITE

Our website <https://bit.ly/design4misinformation> will be the main resource of information about the workshop. The website will include a call for participation, a list and roles of organizers, and how participants can contribute in-order to take part in the workshop. Our website will be echoed through the [Credibility Coalition main web—https://credibilitycoalition.org](https://credibilitycoalition.org) and through their social media and medium posts will include information on [our prior initiatives](#). Our mailing groups consist of 500+ researchers, designers, developers, and journalists with primary interests in misinformation and we intend send our workshop information via these groups.

4 PRE-WORKSHOP PLANS

We plan to invite and foster participation from a broader audience: generally designers, developers, multidisciplinary researchers, and journalists with interest in misinformation. We will share readings and examples of work on our website that can help shed light on the type of participation we are soliciting. Participants will be able to interact with the workshop in multiple ways: present their work in the context of designs to combat misinformation, i.e., working prototypes, conceptual ideas, or preliminary results of an empirical research, and reflect critically on the user behavior point of view and tool creators point of view and engage with other workshop participants.

We will send a call for participation with details of the mode of submission prior to the workshop date and screen the submissions for relevancy and diversity of presentation. We will also provide opportunities for young researchers, developers, or designers to engage with us since we believe combating misinformation is prudent and need much attention.

Participants who choose to submit their work to the workshop may also be asked (based on reviews) to contribute to a medium article that will describe the key outcomes of the workshop.

5 WORKSHOP PLANS

The workshop will be held from 9 AM to 1 PM in a half-day structure (see Table 1) and the entire workshop will be **fully online**. We plan to use ZOOM platform unless if their is specific platform assigned by the CHI workshop planning committee. We will start with an opening talk by Prof. Amy Zhang—<https://homes.cs.washington.edu/~axz>, the lead of the UX working group at the Credibility Coalition—<https://credibilitycoalition.org>. She will brief about the current research landscape of designing for misinformation. Next, participants will be provided with an opportunity to introduce themselves and present their submission to the workshop in two minute rounds. This will help us understand how can we arrange workshop participants in breakout rooms where each group discusses upon direction. All submissions and key discussions will be available on Google Slides (or equivalent)

Time	Activity
09:00 - 09:15	Welcome and the opening presentation by Organizing team
09:15 - 10:15	Introductions and submitted artifacts presentations
10:15 - 10:30	Break: <i>optional—social breakout rooms</i>
10:30 - 11:00	Panel discussion
11:00 - 11:45	Breakout room discussions based on the themes
11:45 - 12:00	Break: <i>optional—social breakout rooms</i>
12:00 - 13:00	Reflections and synthesis

Table 1: Proposed Agenda for the workshop

to allow any participant to access and view them asynchronously. Soon after, we reconvene from the breakout rooms, we will have a panel discussion with experts who have backgrounds in misinformation and design. The panel will be broadcast via YouTube and later embedded on our website.

Following the panel, the organizing team will arrange breakout rooms with key themes where participants may join for a facilitated discussion. At this point, the groups will reflect specifically on the questions and topics arranged by the organizing team. We will have breaks appropriately based on the duration sessions. As the final section in the workshop, we will regroup in the main session to share our key insights from the breakouts. We will spend time collectively synthesizing ideas into themes to consider for the future (e.g., *What are the key items need to consider before designing for misinformation?, How do we evaluate credibility tools from UX point of view?*). The final report will be shared as a blog post to continue the conversation with the global community in Credibility Coalition. The collaborative activities will be supported by tools such as Miro Boards and Google Docs. Periodically throughout the workshop, we will have short breaks which can be used for informal networking. We will post the final agenda on the website after the screening of submissions to the workshop.

6 DISTANCE ASYNCHRONOUS ENGAGEMENT

Since we are planning a fully online workshop, we plan to arrange a mix of synchronous and asynchronous participation, providing opportunities for considering bandwidth or other internet issues. Discussions will be shared on social media using an appropriate hashtag (such as #Design4misinformation) to archive ideas and prompt further conversation online. We plan to broadcast and record the panel on YouTube and we will also encourage participants to share breakout room discussion notes on community Google Docs. These measures are intended to support asynchronous participation from audiences in different time zones. Finally, sharing the final report, as well as other artifacts such as discussion points and photos, will allow us to seek feedback from the larger community for the future of our mission to develop a framework. We also plan to use an online forum (slack channel) to allow for softer networking between participants before the workshop. We expect the online forum to allow for asynchronous participation during the workshop and act as a support channel for the community beyond the workshop.

7 POST-WORKSHOP PLANS

Our main goal is to understand and build a framework to design for misinformation. We will leverage the framework structure based on the workshop participants critical discussion. At the same time, we plan to solicit a blog post about the workshop outcome and further discussions will be directed through our UX working group channel at the Credibility Coalition. We summarize following plans after the workshop.

- Authors will receive feedback on their preliminary research, artifacts submitted to ignite the design landscape for misinformation.
- A blog post summarizing outcome and key findings in the Credibility Coalition Medium <https://medium.com/@credibilitycoalition>
- Workshop will open long term opportunities for participants to join a larger community and brings people together to develop common standards for information credibility as facilitate by Credibility Coalition Organization.

8 CALL FOR PAPERS

With the advancement of technologies and tools, Mis/Disinformation are proliferating at a concerning rate. Users are required to identify emerging types of fake media other than the text such as manipulated images and videos. It is becoming humanly difficult and tools and interventions required to support in distinguishing these manipulated content. At the same time, with the growth of different types of fake media, technology designers and developers needs to identify heuristics that used to evaluate all forms of fake media. These heuristics can act as a framework when they design and develop new tools to combat mis/disinformation. Specifically, when designing tools in the domain of mis/disinformation, designers and developers need to understand users perceptions toward identifying these new forms of fakemedia. Undoubtedly, this effort requires a multidisciplinary approach where not only technology designers but also academics, researchers, physiological experts, cognitive scientist, journalists, and other type of domains experts critical thoughts are collectively important to contribute.

In this workshop, we aim to bring together such multidisciplinary diverse team consisting designers, developers, and user across disciplines to interrogate user needs, understand diverse perceptions and articulate necessary frames need in designing new tools to combat mis/disinformation. The workshop will foster multi perspective of user perceptions and allow to bring together a useful

framework which succinctly provide a guideline to design tools for mis/disinformation from human centered design perspective. With Human-Computer Interaction being at the forefront of designing and developing computing systems for users, we bear special opportunities to address these issues and work on solutions to mitigate problems arising from misinformation.

We invite diverse intellectuals academics, researchers, designers developers, activists, journalists and any personal which has an interest of mitigating the generation and spread of mis/disinformation. We welcome submissions covering a wide range - artifacts that can ignite critical discussion in the workshop and help to achieve the mission of understanding user perceptions and designing tools for mis/disinformation such as

- 1) A preliminary research findings in a position paper with less than 1000 words (1-2 pages) ,
- 2) Use cases (1-2pages) 3) UX prototype of a tool to combat new type of fake media (shareable URL of the prototype in any tool)
- 4) An interaction design (in a shareable tool) or
- 5) A position statement explaining interest to take part in the workshop (1 page).

Submissions links and information will be published in the workshop web.

REFERENCES

- [1] Giovanni Luca Ciampaglia. 2018. The digital misinformation pipeline. In *Positive learning in the age of information*. Springer, 413–421.
- [2] Tilman Dingler, Benjamin Tag, Philipp Lorenz-Spreen, Andrew W Vargo, Simon Knight, and Stephan Lewandowsky. 2021. Workshop on Technologies to Support Critical Thinking in an Age of Misinformation. In *Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems*. 1–5.
- [3] Ian Goodfellow, Jean Pouget-Abadie, Mehdi Mirza, Bing Xu, David Warde-Farley, Sherjil Ozair, Aaron Courville, and Yoshua Bengio. 2014. Generative adversarial nets. *Advances in neural information processing systems* 27 (2014).
- [4] Farnaz Jahanbakhsh, Amy X Zhang, Adam J Berinsky, Gordon Pennycook, David G Rand, and David R Karger. 2021. Exploring lightweight interventions at posting time to reduce the sharing of misinformation on social media. *Proceedings of the ACM on Human-Computer Interaction* 5, CSCW1 (2021), 1–42.
- [5] Britt Paris and Joan Donovan. 2019. Deepfakes and cheap fakes. *United States of America: Data & Society* (2019).
- [6] Gordon Pennycook, Ziv Epstein, Mohsen Mosleh, Antonio Arechar, Dean Eckles, and David Rand. 2020. Understanding and reducing the spread of misinformation online. *ACR North American Advances* (2020).
- [7] Imani N Sherman, Jack W Stokes, and Elissa M Redmiles. 2021. Designing Media Provenance Indicators to Combat Fake Media. In *24th International Symposium on Research in Attacks, Intrusions and Defenses*. 324–339.