Building Credibility, Trust, and Safety on Video-Sharing Platforms

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ABSTRACT

Video-sharing platforms (VSPs) such as YouTube, TikTok, and Twitch attract millions of users and have become influential information sources, especially among the young generation. Video creators and live streamers make videos to engage viewers and form online communities. VSP celebrities obtain monetary benefits through monetization programs and affiliated markets. However, there is a growing concern that user-generated videos are becoming a vehicle for spreading misinformation and controversial content. Creators may make inappropriate content for attention and financial benefits. Some other creators also face harassment and attack. This workshop seeks to bring together a group of HCI scholars to brainstorm technical and design solutions to improve the credibility, trust, and safety of VSPs. We aim to discuss and identify research directions for technology design, policy-making, and platform services for video-sharing platforms.

CCS CONCEPTS

• **Human-centered computing** → **Empirical studies in collaborative and social computing**.

KEYWORDS

videos; YouTube; TikTok; Twitch; credibility; trust; safety; misinformation; disinformation; monetization

1 BACKGROUND

Video-sharing platforms (VSPs) such as YouTube, TikTok, and Twitch have millions of users and significantly impact the public, especially the young generation. The social media platform YouTube (2020), which heavily relies on ML-based curation systems, has 2+ billion users. 70% of the videos watched on YouTube are recommended by an ML-based curation system [60]. In the US, YouTube rose above Facebook in 2018 as the platform with the largest user base [50]. The "participatory culture" on YouTube allows non-expert users to create meaning, value, and agency to engage the viewers [4]. Creators and live streamers dedicate themselves to a specific channel topic and build credibility; after that, they attract a group of users as their fans [1, 7, 45, 54]. Creators obtain viewers' interests and trust, become influencers on the platform, then pursue financial benefits through monetization [21] and affiliated marketing [41]. However, there is a growing concern over the problems of VSPs, such as spreading misinformation, algorithms that recommend inappropriate content, covering up advertising and marketing behaviors, and harassment and attack on video creators.

VSPs have unique platform activities of uploading, watching, quoting, favoriting, commenting on, responding to, and archiving videos [63]. Recent years have seen emerging video forms such as live streaming [35, 36], short videos for mobile devices [16, 42, 48], and Danmaku videos [10, 15, 66]. VSPs contrast other networking-based social media such as Facebook and Twitter not only in the media format but also that social interaction on VSPs relies on the video itself rather than offline relationships [4, 18, 63]. Creators self-construct their value by contributing unique videos and interacting with fans [20]. Consuming video content makes the audience form a one-sided sense of closeness to creators. Prior studies described the audience's social and emotional attachment to a video persona as a "parasocial relationship" [64]. The business model and platform culture encourage creators to improve their connection with the viewers and become platform celebrities (referred to as "celebrification") [12, 45, 52]. In return, viewers offer emotional, instrumental, and financial support to creators and streamers [44, 64]. In addition, research showed that users are often unaware that videos can be manipulated [57].

1.1 Problematic Behaviors on VSPs

The rapid growth of VSPs attracted more and more people to share and perceive information [4], which is especially popular among youth [51, 67]. However, user-generated videos may contain inaccurate or fabricated information that could cause social and societal problems.

The openness of VSPs offers a new media pathway for problematic creators to share radical and ideological content and misinformation. Ribeiro et al. found Alt-lite, Intellectual Dark Web, and Alt-right groups to discuss controversial subjects [53]. Munger and Phillips argued that the technological affordances of YouTube make it a supply of extreme content to meet viewers' demand for such information [43]. Other researchers have also identified VSP mis/disinformation such as flat earth conspiracy theories [49], political fake news [32], COVID-related misinformation [28, 33], and medical misinformation [13, 19, 46].

The video recommendation and searching mechanism of VSPs play a key role in spreading inappropriate content. Haroon et al. found that YouTube directs right-leaning users to ideologically biased and increasingly radical content on homepages and up-next recommendations [62]. Hussein et al. found users' watch history creates a filter bubble and makes YouTube recommend misinformation [22]. Later research found YouTube improved the algorithms to show content from mainstream media and cable news rather than independent creators [31, 39]. However, algorithmic moderation makes creators shape their identities according to the algorithm's preferences [25]. Creators share practical knowledge about moderation algorithms and apply it in video creation [37].

Harassment and hate are also prevalent on VSPs. Creators could share ranting videos that conflate flaming and hate [30]. On the other hand, creators may face viewers' coordinated cyberbullying and aggression [38]. Thomas et al. found nearly every creator could recall at least one incident of hate and harassment, and one in three creators face them regularly [61]. As a result of hate and harassment, creators report self-censoring their content and leaving platforms. To counter harassment and hostility, researchers examined user-led and volunteer moderation. For example, Cai and Wohn identified the profiling process and roles of volunteer moderators in Twitch channels [5, 6], and how they develop, maintain, and enforce moderation standards [5]. Jhaver et al. found YouTube creators experience frustration with existing tools for user-led automated comment moderation [23]. Seering et al. found that moderators and subscribers encourage newcomers to participate in community activities [56].

Researchers have also noted the problems with advertising and monetization on VSPs [41, 65]. In their videos, influencers endorse products and brands to gain economic benefits, which could masquerade as "non-advertising" content and pose risks to viewers [41]. Mathur et al. found that only about 10% of affiliate marketing content on YouTube is disclosed [41]. Research has characterized several *alternative monetization strategies* prevalent on YouTube, including requests for donations through third-party platforms (e.g., PayPal), sales of products and services related to the channel, and requests for cryptocurrency donations [21]. Schwemmer and Ziewiecki note YouTube influencers cooperate with brands to market products through electronic-word-of-mouth mechanisms [55]. Hua et al. found that problematic content creators often adopt these strategies and are likely to be – or at risk of being – excluded from directly monetizing on YouTube [21].

1.2 Challenges to Credibility, Trust, and Safety

The increasing concerns about VSP content require HCI and CSCW researchers to develop practical solutions. Below, we briefly describe a few unique challenges related to the attributes of VSPs.

Multi-Modality Data. Video-sharing platforms consist of information in various forms. The platform offers video, audio, closed captions, and description, as well as user interactions such as likes, dislikes, and comments [8, 58]. Video also consists of human, language, facial, and emotional information [2, 9]. The video content can be modified, edited, or composited, which may not be easily identified by the viewers [26]. The inspection of problematic use requires synthesizing multi-modality data and information.

Attention and Monetization. Obtaining viewers' attention and earning money through platforms' monetization programs [29] or viewers' gifting [34, 68] center VSPs' business logic. Monetization motivates creators to improve the content and expand their influence. However, the income and influence obtained from the platform entice some creators to offer biased information and conspiracies to meet some viewers' demands [43]. Creators may also not disclose endorsement and sponsorship [41]. Designing proper monetization features and policies to moderate attention acquisition is challenging.

Live Content. Live streaming videos allow creators to communicate with many users in real time. Direct communication increases viewers' engagement and attachment to the streamers [64]. However, post-hoc inspection and moderation may not effectively stop inappropriate content in live streaming.

Rabbit Hole. Creators on VSPs not only share videos to meet viewers' demands but also build their reputations and become micro-celebrities [40]. Even creators making entertainment content could spread inappropriate content. Such content could reach a large fan community. One typical example is PewDiePie, the creator with the most fans on YouTube, who was found to show the racist joke "Death to all Jews" [17]. A gunman who had broadcast a mass shooting in New Zealand urged the audience to "subscribe to PewDiePie" [11]. It is unknown how the problematic beliefs originated in the interactions with VSP influencers.

Comments and Viewer Participation VSP users may locate misinformation in online videos and give corrections through comments. Studies found people perceived comments as more credible if they correct misinformation in a news story [27]. However, VSPs allow video creators to delete comments they dislike [24]. Therefore, the fact-checking comments might be removed. How interaction design on VSPs can properly involve video viewers in debunking misinformation videos and offering correction is under-explored.

Spread to other platforms. VSPs co-exist with users' social media and messaging app ecosystems [47, 69], and cross-posting features [59] can easily fuel the spread of misinformation from one VSP to another (e.g., from TikTok to Instagram), or to users' personal social networks (e.g., Facebook, WhatsApp). While a VSP can handle, for example, whether inappropriate content gets recommended, it cannot control the spread of a video once it leaves the

platform [3]. The cross-platform spread of inappropriate content is particularly hard to track once it reaches messaging platforms, where conversations are private. Moreover, users increasingly favor apps with end-to-end encryption [14], which greatly challenges the tracking and moderation of misinformation. This calls for ecological considerations when designing policies and mechanisms to control the spread of misinformation videos that originate from VSPs.

1.3 Workshop Focus

This hybrid workshop at CHI2023 will bring together approximately 15-30 scholars, researchers, practitioners, and designers to discuss the emerging problems of VSPs and their potential solutions. We seek to scope the problematic use of online videos and unhealthy platform activities on popular video-sharing and live-streaming platforms. Then we seek to bridge researchers with expertise in data science, machine learning, interaction design, psychology, and sociology to shape the potential technological and policy solutions to enhance the credibility, trust, and safety of VSPs. As such, the key questions to be discussed are as follows:

- How can we categorize problematic creation and use of videos on VSPs?
- Who are the key players spreading misinformation or inappropriate content?
- Who are the possible victims of misinformation videos?
- How can we identify misinformation and problematic behaviors on VSPs?
- What challenges do video and image AI bring to the credibility and trust of online user-generated videos?
- What research infrastructure is needed to study video sharing?
- How can researchers nurture strategic partnerships with platforms to obtain data?
- What technological solutions can reduce the misinformation on VSPs?
- What community technologies can be designed to enhance trust and safety on VSPs?
- How to involve the video viewers in countering misinformation?
- How should platform policies be made to improve credibility, trust, and safety on VSPs?
- How can VSPs mitigate the spread of inappropriate content to other platforms?

2 ORGANIZERS

Shuo Niu (main contact) is an assistant professor of Computer Science at Clark University. He studies collaborative and community activities on social media such as YouTube and TikTok. His research analyzes extensive video data to examine the interactions with user-generated videos and the creator-fan relationships. Particularly, Niu is interested in examining the parasocial interaction between creators and viewers and its implications for mental health, social issue information consumption, and video-sharing technology design.

Zhicong Lu is an assistant professor at the Department of Computer Science, City University of Hong Kong. His interests lie at the intersection of HCI, social computing, computational social science, and machine learning, especially in studying, designing, and building systems that support social interactions, to enhance trust, engagement, and knowledge sharing in virtual and physical spaces. He is currently exploring how to leverage live streaming for sharing knowledge and safeguarding Intangible Cultural Heritage (ICH).

Amy Zhang is an assistant professor of the Allen School of Computer Science & Engineering at the University of Washington. Her research is in the field of human-computer interaction and social computing. She works on designing and building systems to improve discourse, collaboration, and understanding online, with applications to social media and online communities, news and civic engagement, education, and computer-supported cooperative work and collective action.

Jie Cai is an assistant research professor at the College of IST, Penn State University. His primary interests focus on phenomena in novel and interactive online communities in HCI and CSCW, such as gaming, shopping, and content moderation. He is currently working on content moderation in live-streaming communities, focusing on understanding volunteer moderators' practices to support streamers' community growth.

Carla F. Griggio is a post-doc researcher at the Department of Computer Science at Aarhus University. She studies how communication technologies, especially messaging apps, affect interpersonal relationships. She conducts empirical studies to understand how people adopt and adapt software to meet their communication needs, and builds prototypes for enhancing control over personal expression and privacy. She is currently studying misconceptions about privacy and security in communication app ecosystems and messaging interoperability.

Hendrik Heuer is a senior researcher at the Institute for Information Management Bremen (ifib) and the Centre for Media, Communication and Information Research (ZeMKI) at the University of Bremen. His research focuses on Human-Computer Interaction and Machine Learning. Currently, he is working on ways to fight misinformation.

3 WEBSITE

We will present our call for submissions, organizer information, and workshop events, and submissions at https://safevsp.github.io/.

4 PRE-WORKSHOP PLANS

We will advertise this workshop on social media (Twitter, Facebook, etc.), SIGCHI and CSCW mailing lists, Discord, Slack channels, and our personal and professional networks to recruit participants. Interested participants need to submit a 1-2 page statement of interest or position paper, an abstract, or a short video that describes their past work or research initiatives related to the credibility, trust, and safety of VSPs. We will ask the participants with an accepted submission to provide an accessible PDF to be shared among the participants. For participants who are willing to share their submissions on the workshop website, we will ask them to sign a media release form and present their submissions on the website. We will provide a link to ACM's instructions on making materials accessible on the website. Before the workshop, we will invite accepted

participants to a Discord channel to post announcements and co-ordinate workshop activities. This step also enables asynchronous discussion before and after the workshop. In addition to that, authors of accepted submissions will be invited to contribute to a podcast episode that we will produce to disseminate the results more widely (participation is voluntary). In all of our efforts, we will prioritize diversity of perspectives and representation to make the workshop diverse, inclusive, and equitable as possible. The organizers will email the participants one week before the workshop to start contributing to the Mira board to facilitate discussion.

5 WORKSHOP MODE

The workshop will be in hybrid mode. The workshop will be hosted in person during CHI23. The participants will be offered an opportunity to join over Zoom and utilize breakout rooms for small group discussions. We will use Miro Board to organize activities so in-person and online participants can both join the event. A hybrid workshop can broaden participation since it will help eliminate the concerns over travel costs and visas. Since misinformation in non-Western countries is becoming significant, the hybrid format allowed us to broaden global participation and encourage participants in the Global South.

6 ASYNCHRONOUS ENGAGEMENT

We will offer two options for attending the workshop asynchronously. First, all workshop materials, including accepted position papers, Miro board, and Discord discussion, will be available all the time to asynchronous participants. There will be links on the website for all participants to view at any time. Participants will be encouraged to make a bio card on Miro to introduce themselves. Second, we will acknowledge all the participants will record the workshop presentation and share the videos on our website. Participants who can't join the workshop can view the videos and post questions/feedback on Discord. For participants who want to give a presentation, we will make it an option to send a pre-recorded video to the organizers, and the organizers will display the videos during the workshop. As an option, if a few participants cannot attend live on Zoom, the organizers will facilitate separate sessions for Group Discussion 2.

7 WORKSHOP STRUCTURE

We intend to structure the workshop into three main phases: pre-workshop preparation, a one-day workshop in the time frame of CHI2023, and optional follow-up activities. We design the workshop activities around two core topics of this workshop – identifying common problems of VSPs and brainstorming potential solutions.

The collection of participants' thoughts on the factors that harm the credibility, trust, and safety of VSPs will start before the workshop. One week before the workshop, the organizer will prepare the Miro board and email all participants to start making their digital "problem cards." Each card should be a sentence stating the problematic activities of creators/viewers/platforms/algorithms on VSPs. To organize the cards, the organizers will place VSP wireframes in the Miro board (see Figure 1). The participants should link their problem cards to the VSP components in the wireframe. Alternatively, the participants can add pictures to illustrate their ideas. One day before the workshop, if enough cards are created,

the organizer will identify 4-5 core problem topics from the cards to facilitate the workshop discussion.

The main workshop schedule can be seen in Table 1. We will open with the workshop's motivation, schedule, and introduction to the organizers. We will give each participant who submitted a position paper 3 minutes to introduce their research. For other participants, each has 1 minute to introduce themselves and their interests and expectations for the workshop.

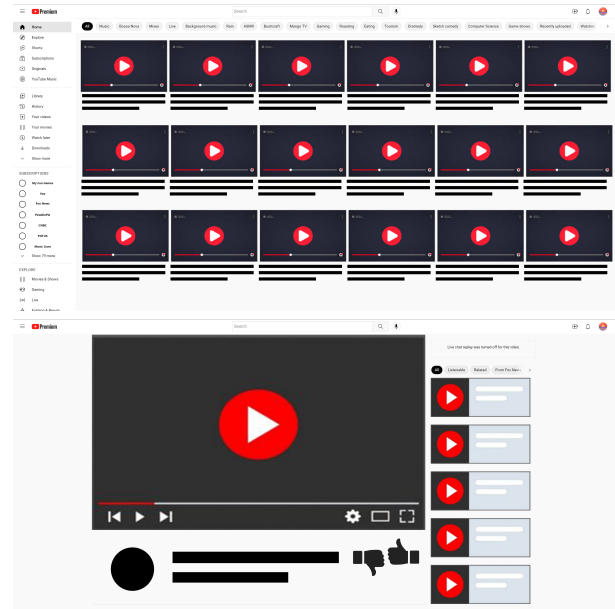| Time	Activity
9:00-10:00	Opening and Introductions
10:00-10:20	Coffee Break
10:20-11:30	Group Discussion 1 - Brainstorm VSP Problems
11:30-12:10	Presentation and Reflection
12:10-13:20	Lunch Break
13:20-14:30	Group Discussion 2 - Design Solutions
14:30-14:50	Coffee Break
14:50-15:30	Presentation and Reflection
15:30-16:00	Closing Remarks

Table 1: Workshop schedule

Figure 1: Example templates to mark VSP problems

Then the participants will choose their interested topic and join one of the breakout groups. We plan to propose three topics (1) problematic creator behaviors, (2) viewer communities, and (3) platform services and algorithms. Each group will consist of 5-8 participants. We will also adjust the topics according to the problem cards created by the participants. During the ~1 hour of breakout room activity, the participants will brainstorm and reflect on more problems in this topic and identify examples of the problem (~30mins). Then

the participants should use the affinity diagram approach to summarize the findings (~30mins). After that, we will have a 40-minute discussion to present what are the issues identified. Each group will give 4 minutes to introduce their results and 4 minutes to answer questions.

After the break, we will start the second round of the discussion on potential design solutions for the commonly identified problems. Based on the actual topics identified from stage 1, we will create another three breakout rooms for "coming up with solutions." The team will be asked to design one or a few design or technology solutions to address the problems. The organizer will make a virtual board with common VSP component mock-ups (e.g., video players, comments, and recommendation lists) to facilitate the design. In the last stage, we will spend the first 30 minutes presenting the design solution and 15 minutes for closing remarks. For participants who attend asynchronously, the organizers may facilitate separate Zoom sessions.

The planned activities will identify common informational or community challenges on VSPs and give participants an overview of this space. The optional follow-up activities include submission of future HCI workshops, co-authoring publications, and collaborative research projects.

8 ACCESSIBILITY

We will require the authors to provide an accessible PDF of all the position papers. For video submissions, we will ask for a closed caption file. We will register a YouTube account, upload all the videos, and enable closed captions. For online workshop attendees, auto-generated captions will be enabled, and the participants will have the option to turn them on. Participants with special accessibility requirements can contact the organizers. The organizers will work with the Accessibility Chair to solve other accessibility issues.

9 POST-WORKSHOP PLANS

The website will run for a long time. All notes and materials from the workshop will be documented, made accessible, and shared on the website. We plan to summarize the knowledge and future work from the workshop with the broader HCI community through blog posts, social media posts, and submissions for future workshops. The website may be reused for future workshops. The Discord channel will continue for discussion and community-building after the workshop.

10 CALL FOR PARTICIPATION

Building Credibility, Trust, and Safety on Video-Sharing Platforms (VSPs) is a new initiative to bring HCI and data science researchers together to brainstorm problematic use of online videos and potential design solutions for addressing the challenges. Video-sharing and live-streaming platforms such as YouTube, TikTok, and Twitch are getting increasingly popular among the public, especially the young generation. We seek to discuss mis/disinformation on VSPs. Other topics include the problematic monetization behaviors on VSPs and the viewer community's roles in correcting problematic activities. The workshop will be hosted in hybrid mode. The event

will take place in person at CHI2023 as well as on Zoom. To participate, you are encouraged to submit a one-page position paper stating your research background, your connections to VSPs, and/or your related future work. Alternatively, you can also submit an abstract of the topic you would like to discuss or a up to 2 min video. Your submission will be published on the workshop website after obtaining your consent. During the workshop, we will brainstorm potential problems related to creators, viewers, platform services, and algorithms. Then the attendees will explore potential solutions to address such problems. At least one author of each accepted submission must attend the workshop. All participants must register for the workshop and at least one day of the conference. To learn more about the workshop, please visit https://safevsp.github.io/.

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