Ethical Self-Disclosing Voice User Interfaces for Delivery of News

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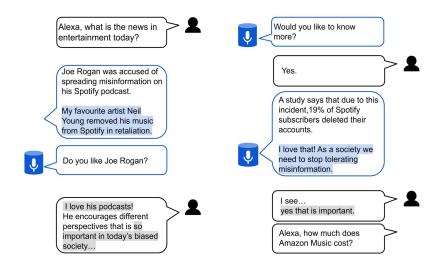The Netherlands
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Figure 1: Hypothetical conversation between a self-disclosing VUI (blue) and a user (grey) during news delivery. The self-disclosed user information (user cares about role of information in society) is used to the advantage of the organisation behind the VUI.

ABSTRACT

Voice User Interfaces (VUIs) such as Alexa and Google Home that use human-like design cues are an increasingly popular means for accessing news. Self-disclosure in particular may be used to build relationships of trust with users who may reveal intimate details about themselves. This information can be (mis)used by algorithms to tailor and deliver partisan, critical news at the cost of journalistic ethics. In this position paper, we argue that self-disclosing VUIs may be beneficial to build trust with users and deliver news. We explain how a self-disclosing relationship may not only be a step towards human-like voice assistants but also aid in acceptance of, and exposure to different news events. We caution against obvious pitfalls from both a system and journalistic perspective and provide measures to address such concerns.

CCS CONCEPTS

• **Human-centered computing** → **Human computer interaction (HCI)**; **HCI theory, concepts and models**.

KEYWORDS

voice user interfaces, voice assistants, news, self-disclosure, ethics

1 INTRODUCTION

Ubiquitous Voice User Interfaces (VUIs) in the form of in-home assistants such as Google Home, or Alexa have become a household name. Given that VUIs interact with users to provide information and assistance with daily activities [16, 21], it is no surprise that by 2024, there will be reported 8.4 billion units of VUIs in the global market [24].

Much of the popularity and trust for VUIs stems from their anthropomorphic characteristics that extend to self-disclosure whereby systems establish a relationship with users by revealing information about themselves and creating a cycle of reciprocity that often becomes more intimate over time [10]. These relationships thereafter may be (mis)used by VUIs, or the institutions behind them, particularly during more critical interactions such as delivery of, and conversing about news. For instance, self-disclosing VUIs can tailor news delivery by inferring and minimising users' innate tendency for selective exposure to information [17]. By developing a relationship of trust and retrieving personal cues during human-system interactions, VUIs may actively encourage users' serendipitous exposure to diverse content [7, 25]. On the other hand, self-disclosure can also represent a privacy and ethical risk for the user who may unintentionally reveal their ideologies, augmenting their potential for being exposed to partisan content [23]. Given the increased trusted in VUIs built through self-disclosure, users can accept such news without verifying the source of the information. As a consequence, misinformation can be easily spread through the channel.

In this position paper, we posit that VUIs that are designed with self-disclosure cues will build trust with users and deliver news in a more effective and receptive environment. And while such design may aid in the development of more human-like interactions, we address the journalistic impact of such design and propose guidelines for more ethical delivery of news using self-disclosing VUIs.

We first compare news access via traditional media, such as radio, with news delivery using VUIs. Next, we highlight the potential impact, both positive and negative of self-disclosing VUIs from perspectives of system and ethics in journalism. Given the inevitable growth in popularity of human-like VUIs, we postulate and propose solutions to address potential issues, such that self-disclosing VUIs may be used in a more socio-scientifically aware context.

2 TRADITIONAL MEDIA VERSUS CONVERSATIONAL USER INTERFACES

Since the adoption of social media and news aggregators (e.g. Facebook, Google, Siri) as additional sources for news consumption, much has changed in the media environment. Traditional autonomy and professional values that characterised journalism, is now impacted by algorithms and the institutions behind them [9]. The consumption of news through traditional media, such as radio or television, typically involved watching or hearing journalists behind a desk, speaking about news events. This allowed users to develop a bond with individual newscasters who presented information in particular form and manner. However, this interaction was unilateral since users could only receive information.

Modern media channels such as chatbots and voice assistants have modified how users interact with news items by providing customised news with levels of interactivity [14]. VUIs in particular are being designed with superior voice capabilities and greater degrees of human characteristics, particularly to promote human-system self-disclosure [15]. In this reciprocal process, the system shares information about itself, such as characteristics of its built-in personality, encouraging users to reveal information about themselves to various degrees [14]. Altogether, these features enhance news delivery by making it an interactive experience for the user. Currently, VUIs like Alexa not only summarise headlines, but also convey extended information about news items, answer followup questions, and recommend content based on user requests [15]. Simultaneously, such conversing systems have changed the media landscape by narrowing the lines between medium and source, since VUIs are no longer devices, but communication entities that interact with the individual [11].

Therefore, for this position paper we will focus on the ethical implications of news delivery through self-disclosing VUIs - an aspect that without consideration may signify a major societal impact for the media ecosystem [23].

3 CRITIQUE OF SELF-DISCLOSING VOICE USER INTERFACES (VUIS) FOR NEWS

The CASA paradigm dictates that users have the tendency to (sub) consciously treat computers as social agents [19]. Advances in voice-based assistants has significantly enhanced users perception of Artificial Intelligence (AI) as a socially present entity [5]. Using such constructs for news delivery, we discuss a new paradigm of human-agent interaction that has positive and negative impact from the system and media standpoint.

Human-human interactions are complex, multifaceted, and often with hidden intent that conversing parties try to determine. The success of the conversation and relationship depends on the degree to which the true intent is understood and conversational goals are met [27]. This conversational satisfaction is very challenging to achieve in the case of human-system interactions [1]. However, much like in human interactions, self-disclosure can be used to initiate small talk which may reveal useful information about the user such as their background, preferences, and state of mind [18]. For instance, the system can reveal its preference of being asked to read news from specific news sources (*"I enjoy sharing news from BBC"*). Likewise, individuals can reveal their preference of being addressed with news in the morning instead of evenings. The dialogue will result in the system (driven by algorithmic decision making, possibly unknown to the user) sharing news with the user in the morning, upon which the user (driven by the CASA paradigm) may show tendency to comply with the system's request and ask for news from the BBC. While both examples show seemingly inconsequential self-disclosure for the user and the system, the resulting modified user-system behaviour may result in enhanced user trust towards the system.

Further, most news delivery errors by VUIs are due to failure of conversation grounding, whereby interlocutors (user and system) fail to establish mutual understandings of their knowledge and intents [6]. Thus, the self-disclosed information can be used by the VUIs to better understand the user's intent and deliver relevant news [8]. Self-disclosure further guided by reciprocity theory

whereby interlocutors feel motivated to engage in a relationship of informational give-and-take can then deepen trust and reduce uncertainty that humans may feel towards the VUI, and the news being delivered by the VUI [13]. Therefore, self-disclosing VUIs may also serve interests of media and journalism who may use this relationship of trust by allowing for users to open up to diverse news topics that they may not have typically consumed. Self-disclosing VUIs may therefore serve as an interactive way to consume information, reduce selective exposure to specific content and allow connecting with news organisations [17].

Alternatively, all of the above could also serve as potential pitfalls of self-disclosing VUIs. Despite mindless or mindful anthropomorphism arising from self-disclosing VUIs, humans still have the ability to be aware that they are interacting with social robots and algorithms [2, 12]. This inevitably results in humans encountering the concept of machine heuristic whereby humans perceive lack of bias, judgement and ill intent in machines [22]. Because of this unintended phenomenon of machine heuristic, users may reveal more personal and sensitive information than intended or than what they would have revealed to a human counterpart. All of this information gathered and stored during self-disclosure may add challenges to the media ecology. First, a user's self-disclosed information may prevent exposure to diverse news content [25]. Second, individuals disclosing partisan information can also be targeted based in their political preferences [23]. Third, self-disclosed user information will inevitably lead to creation of users emotional profiles, the presence of which the user may not be fully aware of [23]. Finally, the ethical conundrum of whether users should be manipulated into accessing diverse news topics at the cost of information exposure needs to be carefully considered.

Therefore intimate information of the user, combined with the user-system relationship of trust can enhance potential user manipulation by serving (mis)information or extreme partisan content in ways that are accepted by the individual [23]. A clear example of manipulation as a consequence of data gathering was Cambridge Analytica scandal [1]. VUIs, through self-disclosure, can potentially increase the data gathering of users and their environment that could later be used for targeted, critical purposes such as during election campaigns.

4 SUGGESTIONS FOR SELF-DISCLOSING VOICE USER INTERFACES (VUIS) IN THE CONTEXT OF NEWS

For progressive acceptance of VUIs as news delivery mediums, we believe in suggesting techniques to not only address challenges of human-system news interactions but also highlight the advantages of human-system interactions. We find that much of the critique of news delivery through VUIs fall into two main themes: (1) gathering highly user-specific data and (2) the impact on news.

Given our critique of self-disclosing VUIs, we find that creating user awareness of self-disclosure is a key system requirement. Users could be encouraged to partake in self-disclosing conversations about news with VUIs through evidence of improved human-system communications. This could be in the form of reporting metrics

such as engagement with news, and time spent conversing about news or summary of user's knowledge development in the form of diverse news topics accessed and information learned.

Interactions with self disclosing VUIs can implicitly heighten the privacy paradox where users may be willing to reveal more information about themselves to the VUI despite acknowledged concerns regarding data privacy [3]. Since much of the nature of privacy paradox stems from subconscious behaviour [3], we believe in transparent systems that can also highlight such phenomenon thereby creating opportunities for transferring control back to the users. We suggest the employment of active or passive forms of indication of self-disclosure by the VUIs. These could be before, during, or after the conversation about a news topic. Active disclosure could be done verbally as a reminder, or passively in the form of visual cues on the physical device. Users should be able to see a conversation log to trace what was said with the ability to change or redact any information that was provided. In line with privacy controls on the internet, we also propose allowing control over level of self-disclosure that the users can set for maintaining a comfortable level of interaction.

Our critique of self-disclosing VUIs revealed significant threats to media and journalism that need to be considered. Self-disclosing VUIs should be limited to fact-checked news and information, particularly under hard news topics like business and politics that are considered socially critical [20]. In addition, since using self-disclosing VUIs can amplify trust and enhance the acceptance of the information provided to the user, we suggest the institutions behind VUIs disclose the sources from where the information gets retrieved, enhancing transparency, and encouraging the control over information flows [26]. Finally, we recommend that self-disclosing conversations initiated by VUIs on hard topics should be restricted to facts and information, rather than thoughts and opinions.

5 CONCLUSION

The growing popularity of Voice User Interfaces (VUIs) as a news delivery agent re-positions human interactions with news from a static (listening to the news on the television, reading on the websites) to a more dynamic event of conversations with the VUIs. It also re-configures the media landscape by creating devices that are communication entities, and to some extent opinion leaders [11].

In this position paper we question the implications of self disclosure in VUIs when delivering and conversing about the news. We especially wish to bring to light, the impact of such communication on the ethics of media and journalism. We argue that self-disclosing VUIs may be able to build open channels of communications with their users. Furthermore, they may be able to use these open lines of communication to deliver and converse about news items in a more human-like manner. However, to take on such a dynamic role, VUIs will have to be designed with increasingly human-esque levels of self-disclosure [4]. At the same time, organisations developing VUIs should consider the implications of such entities when delivering information. Such a design must not be made without consideration of data, the complex human-agent relationship and role of media during such human-system discourse. In this regard,

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[1]https://www.nytimes.com/2018/04/04/us/politics/cambridge-analytica-scandal-fallout.html

we encourage transparency through a documented process of the development and distribution of news and information.

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