City Research Online

City, University of London Institutional Repository

Journalists as Design Partners for AI

Marisela Gutierrez-Lopez, Sondess Missaoui, Stephann Makri, Andrew MacFarlane
Centre for HCI Design
City, University of London
London, UK
name.lastname@city.ac.uk

Colin Porlezza, Glenda Cooper
Department of Journalism
City, University of London
London, UK
name.lastname@city.ac.uk

ABSTRACT

We report on a project exploring the development of an AI-enabled system for researching and verifying news articles. In particular, we underscore the value of journalists in the role of designers in a wider multi-disciplinary team including AI experts and interaction designers. We unpack our learnings by presenting three sensitizing concepts for Human-Centred AI technologies in the context of journalism. We contribute these concepts to provoke discussion and inspiration for design work.

KEYWORDS

Journalism, Artificial Intelligence, information access, multi-disciplinary team, co-design workshop.

INTRODUCTION

We introduce DMINR, a multi-disciplinary research project funded by Google News Initiative to create a digital tool for researching and verifying stories. This project responds to the need of new tools to manage information stored electronically, supporting journalists in identifying relevant information, conducting investigations, and finding newsworthiness in complex and scattered data sets. We envision the DMINR tool as an Artificial Intelligence (AI) enabled meta-search engine to

Figure 1: Card game to explore the journalistic workflow and sources of information.

Conversation starter: "fill the blank" activity to surface assumptions and desires about technology.

Card game 1: deck of 21 cards to explore journalistic practices and values. Each card includes one journalistic concept: either a step in the *news workflow* (e.g. publishing a story, gathering evidence, verifying information) or a *source of information* (e.g. official documents, online databases, social media and UGC). Attendees were asked to fit the cards together in a logical way.

Card game 2: deck of 14 cards to provoke discussion around AI technologies. Cards depict statements to describe *positive* or *negative* views on AI technologies (e.g. AI could help me save time, algorithms are too opaque). Attendees were asked to pick the card(s) they most agree and most disagree with.

Sidebar 1: DMINR co-design workshop activities

aggregate data from different reliable sources. More specifically, we are using information retrieval and deep learning technologies to extract, merge, and monitor data. Our tool, which is in its initial phase, is primarily targeted at journalists who engage in investigative work, blending journalistic expertise with AI to assist them in the processes of information research, gathering, and verification. This paper contributes with three sensitizing concepts presenting the challenges that will guide our early design work and opening spaces to provoke discussion. Furthermore, we reflect on the lessons learnt from applying design thinking methodologies to harness the multi-disciplinary potential of our team, composed by experts on journalism, information retrieval, and interaction design.

At first sight, several potential applications appear at the intersection of AI and journalism. Journalists are more than ever challenged by information overload, public distrust of the news media, and increasingly shorter news cycles. In response, a handful of AI-based applications to make sense of big data have been developed in the context of journalism (e.g., INJECT [11] and Social Sensor [12]). These applications provide access to large amounts of data that assist journalists in their everyday work. However, little research has been carried out in relation to journalism and AI [6] [8], and this space presents an opportunity for worthwhile research. More work is required to identify what kind of specific system functionalities are compatible (or incompatible) with journalism practice, norms, and values. This work is critical in consideration of the potential ethical threats that AI technologies pose to the journalistic values of accuracy, impartiality, and transparency [1] [2] [9].

CO-DESIGNING WITH JOURNALISTS

Involving a variety of perspectives better democratises design [15]. In our project, we employ a co-design approach to engage all team members in design activities to reflect on the *design, technical, and journalistic* problems we are facing. Creativity and design thinking methodologies are crucial for our research due to the apparently opaque and isolated way in which AI technologies are developed. As a first step in our research, we undertook an internal co-design workshop to gather an initial understanding on how to fit AI technologies into news production.

The objective of our first co-design workshop was understanding the workflow and sources of information used by journalists during investigative assignments. The session had the participation of seven DMINR team members: four journalists with several years of experience working at large newsrooms and one HCI expert as attendees, and a design researcher and an AI researcher as facilitators (first and second author respectively). The workshop was clearly differentiated from a "regular" project meeting: we set up a dedicated space and time, crafted original materials, and recorded audio with consent of the attendees. Except for the facilitators, the attendees were not made aware of the specific methodology up until the actual session. The workshop had an approximate duration of two hours and was organised in three design activities: a conversation starter and two card games (see Sidebar 1). We focused on discussing journalistic concepts through card games as an approachable, playful way

Q1: "*[Journalists] simply have to say 'on balance, given all that I know, I'm going to give weight or I'm not going to give weight to this source for this story. The importance of this source over that source'.* **These are all in essence matters of judgement, they're not matters of proof**. *Occasionally are matters of proof, but they are much more frequently matters of judgement.*"
- Journalist 1 (J1)

Q2: "*E3: Is it ever the case that verification might undermine a story angle [...]?*
J5: If the story doesn't stand up, it doesn't stand up [...]. In terms of news, you verify or you debunk a story angle. I mean, that's an important part of the process as well. **Verification has an outcome. The outcome would either prove a theory or debunk it**."
- HCI Expert 3 (E3) and Journalist 5 (J5)

Q3: "*As long as it's completely transparent. Part of me is, [using AI systems] would be really great, let's have a shortcut. And another part of me would be,* **what I'm missing out? what is the algorithm deciding for me?**"
- Journalist 4 (J4)

Sidebar 2: Quotes from the DMINR workshop attendees.

to generate and communicate ideas [10]. The content of the decks of cards (see Figure 1 and Sidebar 1) was based on our previous engagements with journalists and a literature review. These cards are available for download from our project website [1]. The data gathered was transcribed, anonymised, and analysed using Thematic Analysis [5].

SENSITIZING CONCEPTS AROUND JOURNALISM AND AI TECHNOLOGIES

During our co-design workshop, we reflected on the potential scope of AI in news cycles, focusing on finding and articulating relevant problems. In tandem with a literature review and subsequent team discussions, we collated the most salient themes from our Thematic Analysis into three *sensitizing concepts* to guide and inspire our design work [4]. These concepts embody the challenges and opportunities for designing Human-Centred AI technologies that have arisen from our research. For this CHI workshop, we bring forward these sensitizing concepts to provoke discussion and garner enthusiasm from the HCI and journalistic communities.

Explore information for original story creation. Journalists apply specialised judgement and expertise for selecting sources of information, managing complex social interactions, and presenting facts according to professional standards in order to reach audiences. As explained by Journalist 1 (J1), a workshop attendee, decisions made by journalists for telling stories are not purely logical or factual but based on previous experiences (see Q1, Sidebar 2). Journalists "uncover the lead" by exploring information and detecting what is newsworthy based on previous experiences. However, as each story is unique, there are no pre-defined workflows to find relevant information. Using a playful design technique in our workshop, we helped the journalists to lower the barriers and articulate their work in flexible and uncompromising terms. Journalists used metaphors such as "fishing around" (J5) or "pecking" (J1) to describe how they seek information. We aim to capture this flexibility by envisioning our tool as an interactive canvas for story creation, with capabilities for searching, visualising, and exploring data assisted by AI recommendations. Such a tool could reduce the cognitive load of journalists by keeping track of the origin of information and supporting serendipitous discoveries.

Democratise access to trustworthy information sources. Journalists commonly subscribe to professional norms of accuracy and objectivity in writing news articles, relying on verification strategies to legitimise their work [14]. An open question for our project is how to support verification in a way that is empathetic to the way journalists work. According to Shapiro et al. [13], verification is better described as an ongoing process that cannot be pinned down to standardised strategies or methods, as journalists make "pragmatic compromises" on what and when to verify. Thus, attempting to narrow down verification to a rigid workflow that can be systematised is undesirable. Instead, we believe data access could be democratised by AI technologies as a way to support verification. Official documents such as court documents and government statistic reports are consistently mentioned as reliable

sources of information [13]. However, accessing public data sources can be restrictive, as harvesting, organising, and analysing unstructured data can be time consuming and require considerable expertise [3]. For instance, in our research we have found that UK's ONS data is difficult to access, and whilst public, its licensing scheme might place restrictions on how people use it. As a principle, our tool aims to balance both public and private data sources that are reliable and in use by journalists. This could potentially help journalists save time by identifying verifiable story leads early on the process, as illustrated by a conversation between E2 and J5 (see Q2, Sidebar 2).

Provenance, Control, and Instruction for Transparency. Transparency is a core value in digital journalism [14]. According to Diakopolous and Koliska [7], algorithmic transparency is required to evidence the automatic decisions made by a system and its impact on news production. As hinted by J4 in Q3 (see Sidebar 2), algorithmic transparency is crucial for tool adoption, as journalists have polarised opinions about relying on AI systems for investigative work. During our discussions, we identified three opportunities for promoting algorithmic transparency on AI systems:

- *Show provenance*: Origin of the data should be clarified, as well as the rationale of why certain sources have been included (or excluded) and how the algorithm has been trained.
- *Retain control*: Journalists should remain in control of their investigation at all times. The system should allow the user to manipulate the algorithm, for instance by defining search criteria, filtering results, or simply turning off AI suggestions.
- *Provide instruction*: Provide journalists with easy tutorials about what our tool is, how it works, and potential usage scenarios including benefits and limitations.

Beyond transparency, our project should consider how to negotiate understanding about the "black box" in terms of accountability, agency, and how AI can capture journalistic norms and values.

CONCLUSION AND FUTURE WORK

We envision DMINR a tool for democratising access to trustworthy information and blending journalistic judgement with AI technologies, empowering journalists to practice their professional values in new ways. This vision requires our team to continue working on close collaboration rather than on disciplinary silos. Our future undertakings include field work at newsrooms across the UK and subsequent co-design workshops using our sensitizing concepts to provide guidance and inspiration for design. Our future work - and participation in this CHI 2019 workshop - will provide us with a strong understanding of work practices in newsrooms and broader insights into journalistic values.

ACKNOWLEDGMENTS

REFERENCES

[1] Mike Ananny. 2016. Toward an Ethics of Algorithms: Convening, Observation, Probability, and Timeliness. *Science Technology and Human Values* 41, 1 (2016), 93–117. https://doi.org/10.1177/0162243915606523

[2] Mike Ananny and Kate Crawford. 2018. Seeing without knowing: Limitations of the transparency ideal and its application to algorithmic accountability. *New Media and Society* 20, 3 (2018), 973–989. https://doi.org/10.1177/1461444816676645

[3] Eddy Borges-Rey. 2016. Unravelling Data Journalism: A study of data journalism practice in British newsrooms. *Journalism Practice* 10, 7 (2016), 833–843. https://doi.org/10.1080/17512786.2016.1159921

[4] Glenn A. Bowen. 2006. Grounded theory and sensitizing concepts. *International Journal of Qualitative Methods* 5, 3 (2006). https://doi.org/10.1177/160940690600500304

[5] Virginia Braun and Victoria Clarke. 2013. *Successful Qualitative Research: A Practical Guide for Beginners*. SAGE Publications Ltd, London.

[6] Matt Carlson. 2015. The Robotic Reporter: Automated journalism and the redefinition of labor, compositional forms, and journalistic authority. *Digital Journalism* 3, 3 (2015), 416–431. https://doi.org/10.1080/21670811.2014.976412

[7] Nicholas Diakopoulos and Michael Koliska. 2016. Algorithmic Transparency in the News Media. *Digital Journalism* 5, 7 (2016), 809–828. https://doi.org/10.1080/21670811.2016.1208053

[8] Konstantin Nicholas Dörr. 2016. Mapping the Field of Algorithmic Journalism. *Digital Journalism* 4, 6 (2016), 700–722. https://doi.org/10.1080/21670811.2015.1096748

[9] Konstantin Nicholas Dörr and Katharina Hollnbuchner. 2017. Ethical Challenges of Algorithmic Journalism. *Digital Journalism* 5, 4 (2017), 404–419. https://doi.org/10.1080/21670811.2016.1167612

[10] Andres Lucero and Juha Arrasvuori. 2010. PLEX Cards : A Source of Inspiration when Designing for Playfulness. In *Fun and Games 2010*. 28–37.

[11] Neil Maiden, Konstantions Zachos, Amanda Brown, George Brock, Nyre Lars, Alexander Nygrad Tonheim, Dimitris Apostolou, and Jeremy Evans. 2018. Making the News : Digital Creativity Support for Journalists. In *Proceedings of the 2018 ACM annual conference on Human Factors in Computing Systems - CHI '18*. 21–26.

[12] Steve Schifferes, Nic Newman, Neil Thurman, David Corney, Ayse Göker, and Carlos Martin. 2014. Identifying and Verifying News through Social Media: Developing a user-centred tool for professional journalists. *Digital Journalism* 2, 3 (2014), 406–418. https://doi.org/10.1080/21670811.2014.892747

[13] Ivor Shapiro, Colette Brin, Isabelle Bedard-Brule, and Kasia Mychajlowycz. 2013. Verification as a Strategic Ritual: How journalists retrospectively describe processes for ensuring accuracy. *Journalism Practice* 7, 6 (2013), 657–673. https://doi.org/10.1080/17512786.2013.765638

[14] Craig Silverman. 2014. Verification Handbook: An ultimate guide on digital age sourcing for emergency coverage. *European Journalism Centre* (2014), 122. http://verificationhandbook.com/

[15] Marc Steen. 2013. Co-Design as a Process of Joint Inquiry and Imagination. *Design Issues* 29, 2 (2013), 16–28. https://doi.org/10.1162/DESI{_}a{_}00207