

Human-Computer Interaction and the Future of Work

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ABSTRACT

Advances in computing technology, changing policies, and slow crises are rapidly changing the way we work. Human-computer interaction (HCI) is a critical aspect of these trends, to understand how workers contend with emerging technologies and how design might support workers and their values and aspirations amidst technological change. This SIG invites HCI researchers across diverse domains to reflect on the range of approaches to future of work research, recognize connections and gaps, and consider how HCI can support workers and their wellbeing in the future.

CCS CONCEPTS

• **Human-centered computing** → **Human computer interaction (HCI); Empirical studies in HCI.**

KEYWORDS

Future of Work

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1 INTRODUCTION

Rapid advancements in computing technology, ever-changing economic and political factors, and ongoing crises such as the COVID-19 pandemic and climate change are intertwining to radically change where and how people work, and the HCI community has a central role to play in shaping the future of work. Many people are currently working and collaborating remotely, driven by the pandemic but also in pursuit of greater flexibility and less commute time [2, 18]. Looking at essential work, however, such as healthcare and sanitation professions, we see the intensification of in-person work [3, 7, 17]. Even before the pandemic, we have also been grappling with the changing spatialities and temporalities of the increasing precarity and informalization of work through gig work, platformization, and subcontracting, including in contexts where informal work is already highly prevalent [5, 15]. Meanwhile, we

are seeing increasing development of intelligent systems intended to be used for management, decision-making, resource allocation, and automation in many forms of work and transportation [16]. The influence of these technologies has prompted recognition of the role of collective organizing and responsibility of tech workers and academics in creating technologies that impact other professions and people [19, 20]. Amidst changing work practices and opportunities for work, now is a key time for the field of HCI to reflect on its role in supporting workers' needs, values, and wellbeing under these new circumstances.

As organizers of CHIWORK, a speaker series on the future of work that we have hosted since April 2020 [1], we have gained a deep understanding of the complexity of the future of work. CHIWORK features a series of conversations with experts in research areas that are related to the future of work and wellbeing. To date, we have over 50 recorded conversations available on YouTube, displaying the breadth of the area. Building this community over the past one and a half years has shown us how the future of work is not solely constituted through research on labor, technology, and contained workplaces, but also ethics, accessibility, mobility, health, wellbeing, and other topics. Prior initiatives also reflect many different perspectives on HCI's role in the future of work. There have been workshops proposing questions around how we can support worker-centered design and collective organizing [9, 10, 19], or how we value specific types of work such as care work [13]. There have been events examining human-machine collaboration [6, 21], changing spatialities and temporalities of work [8, 11, 15], and computer-supported career development [12]. The focus of these initiatives have spanned the social sciences, design, system-building, and activism.

This SIG would build on CHIWORK conversations and previous events by explicitly recognizing the diverse research communities involved in the future of work. We aim to bring researchers together to draw connections and recognize potential disjointedness across research areas. This will allow us to, at a momentous time, reflect on the influence that HCI as a field has had and can have on the future of work. The future of work aligns with research topics and communities such as the workplace and work practices, critical data studies, AI ethics, accessibility, CSCW, Ubiquitous and Pervasive Computing, Auto UI, and Conversational UI. This SIG is well-positioned to grow the future of work community, since we will center how the topic goes beyond labor and the workplace, and will offer avenues for community-building through CHIWORK.

2 SIG GOALS AND FORMAT

The SIG will bring together researchers and designers who look at the diverse array of topics under the umbrella of the future of work. This will allow us to discuss the cross-cutting social, economic, and political trends that shape these domains and deliberate over research trajectories that engage with them or imagine alternatives. The SIG aims to do the following:

- (1) Outline who and what types of work are represented in future of work research in HCI and consider where possible gaps are
- (2) Discuss salient trends in work, technology, and policy that are affecting the future of work

- (3) Compare frameworks and methods across research areas for studying the work, work-life, and stakeholders' perspectives, as well as approaches for designing with workers and the power dynamics and other realities of their workplace
- (4) Build community among researchers working in this area

The format of the SIG will be centered on small- and large-group discussions in order to facilitate the exchange of insights. The schedule is laid out in Table 1. We have scoped the SIG goals and schedule such that we can start conversations around how different communities within HCI can better work together to conceptualize the future of work, identify important gaps that present future lines of inquiry, and set up avenues for connecting going forward.

Table 1: SIG Schedule

Duration	Activity
10 mins	Introduce organisers and discussion topics
40 mins	Breakouts, one topic per group
10 mins	Group report writing for shareouts
15 mins	Shareouts to the main group
15 mins	Q&A and next steps

In terms of virtual spaces to support interaction, we will be using Miro as a way to help groups report back from small group discussions, and to draw visual connections between discussion groups. We will also have virtual avenues for staying in touch, for example creating a "phonebook" so that participants can look one another up later, or for announcing relevant future events such as CHIWORK sessions.

3 CONTINUITY WITH THE CHIWORK COMMUNITY

We aim for the community created through this SIG to be sustained through CHIWORK, which has collaboratively conceptualized a long-term foundation and vision around impactful dialogue, community building, and publication. CHIWORK grew out of NSF-funded research led by CHIWORK general chairs and co-organizers of this SIG, Andrew Kun and Orit Shaer. For more than a year, the weekly speaker series entailed regular, sustained interaction among researchers looking at work in HCI, providing welcome respite from the perceived lack of opportunities for research dialogue when the COVID-19 pandemic first hit in 2020. These conversations included experts in numerous domains, spanning several subcommittees within CHI, such as accessibility and aging; learning, education, and families; health; design; games and play; critical computing, sustainability, and social justice; and more.

This momentum led to seminars and written output. The Dagstuhl Seminar in June 2021 on "Human-Computer Interaction to Support Work and Wellbeing in Mobile Environments" allowed participants to exchange research and design ideas and consider societal implications of research in this space [4]. The seminar ended with a summit attended by CHIWORK-invited speakers, bringing together new perspectives and brainstorming opportunities. CHIWORK also set the stage for an IEEE Pervasive special issue [14] focused on ongoing and predicted changes in work due to the pandemic.

During the year 2021-2022, the General Chairs Andrew and Orit, and four additional Technical Program Chairs Anna Cox, Chris Janssen, Neha Kumar, and Helena Mentis, continue to host conversations with invited speakers on topics spanning various domains, including sustainable futures, gig work, worker-centered perspectives, the future of care work, among others. This year will culminate in a research symposium, with the support of our Papers Chairs Susanne Boll, Sarah Fox, Noopur Raval, and Max Wilson. Given the close synergies between CHIWORK topics and CHI subcommittees, and the CHIWORK and CHI communities, continuing our conversations at CHI presents the logical next step towards building a stronger and richer research community. Building on the foundation of CHIWORK, there will be opportunities for SIG attendees to attend and contribute to future CHIWORK conversations, hear about and shape opportunities to author/submit papers or co-organize events, and continue collaborations with aligned researchers from within the larger HCI community.

REFERENCES

- [1] [n. d.]. CHIWORK. <https://www.chiwork.org/>.
- [2] Andrea Alexander, Aaron De Smet, Meredith Langstaff, and Dan Ravid. 2021. What employees are saying about the future of remote work. *McKinsey & Company* (2021).
- [3] Mehrdad Eftekhari Ardebili, Morteza Naserbakht, Colleen Bernstein, Farshid Alazmani-Noodeh, Hamideh Hakimi, and Hadi Ranjbar. 2021. Healthcare providers experience of working during the COVID-19 pandemic: a qualitative study. *American journal of infection control* 49, 5 (2021), 547–554.
- [4] Stephen Brewster, Andrew Kun, Andreas Riener, and Orit Shaer. 2021. Human-Computer Interaction to Support Work and Wellbeing in Mobile Environments (Dagstuhl Seminar 21232). In *Dagstuhl Reports*, Vol. 11. Schloss Dagstuhl-Leibniz-Zentrum für Informatik.
- [5] Martha Alter Chen. 2009. Informalization of labour markets: Is formalization the answer? In *The Gendered Impacts of Liberalization*. Routledge, 207–234.
- [6] EunJeong Cheon, Cristina Zaga, Hee Rin Lee, Maria Luce Lupetti, Lynn Dombrowski, and Malte F Jung. 2021. Human-Machine Partnerships in the Future of Work: Exploring the Role of Emerging Technologies in Future Workplaces. In *Companion Publication of the 2021 Conference on Computer Supported Cooperative Work and Social Computing*, 323–326.
- [7] Makiko Deguchi and Matsumoto Chie. 2020. Voices of Sanitation Workers in Japan amidst the COVID-19 Pandemic. *Asia-Pacific Journal-Japan Focus* (2020).
- [8] Justin Edwards, Philipp Wintersberger, Leigh Clark, Daniel Rough, Philip R Doyle, Victoria Banks, Adam Wyner, Christian P Janssen, and Benjamin R Cowan. 2021. CUI@ Auto-UI: Exploring the Fortunate and Unfortunate Futures of Conversational Automotive User Interfaces. In *13th International Conference on Automotive User Interfaces and Interactive Vehicular Applications*. 186–189.
- [9] Anton Fedosov, Airi Lampinen, Tawanna R Dillahunt, Ann Light, and Coye Cheshire. 2019. Cooperativism and Human-Computer Interaction. In *Extended Abstracts of the 2019 CHI Conference on Human Factors in Computing Systems*. 1–4.
- [10] Sarah E Fox, Vera Khovanskaya, Clara Crivellaro, Niloufar Salehi, Lynn Dombrowski, Chinmay Kulkarni, Lilly Irani, and Jodi Forlizzi. 2020. Worker-Centered Design: Expanding HCI Methods for Supporting Labor. In *Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems*. 1–8.
- [11] Julie Hui, Justin Cranshaw, Yasmine Kotturi, and Chinmay Kulkarni. 2019. The Future of Work (places) Creating a Sense of Place for On-demand Work. In *Conference Companion Publication of the 2019 on Computer Supported Cooperative Work and Social Computing*. 487–491.
- [12] Julie Hui, Elizabeth M Gerber, Lynn Dombrowski, Mary L Gray, Adam Marcus, and Niloufar Salehi. 2018. Computer-Supported Career Development in The Future of Work. In *Companion of the 2018 ACM Conference on Computer Supported Cooperative Work and Social Computing*. 133–136.
- [13] Naveena Karusala, Azra Ismail, Karthik S Bhat, Aakash Gautam, Sachin R Pendse, Neha Kumar, Richard Anderson, Madeline Balaam, Shaowen Bardzell, Nicola J Bidwell, et al. 2021. The Future of Care Work: Towards a Radical Politics of Care in CSCW Research and Practice. In *Companion Publication of the 2021 Conference on Computer Supported Cooperative Work and Social Computing*. 338–342.
- [14] Andrew Kun, Orit Shaer, and Shamsi Iqbal. 2021. The Future of Work: COVID-19 and Beyond. *IEEE Pervasive Computing* 20, 04 (2021), 7–8.
- [15] Siân Lindley, Noopur Raval, Hamed S Alavi, Silvia Lindtner, and Ding Wang. 2019. The Future of Work. In *Extended Abstracts of the 2019 CHI Conference on Human Factors in Computing Systems*. 1–8.
- [16] Susan Lund, Anu Madgavkar, James Manyika, Sven Smit, Kweilin Ellingrud, Mary Meaney, and Olivia Robinson. 2021. The future of work after COVID-19. *McKinsey Global Institute* 18 (2021).
- [17] S Niyati and S Nelson Mandela. 2020. Impact of the pandemic on accredited social health activists (ASHA) in India. *Review of Agrarian Studies* 10, 2369-2020-1851 (2020).
- [18] Nick Routley. 2020. 6 charts that show what employers and employees really think about remote working'. In *World Economic Forum*: <https://www.weforum.org/agenda/2020/06/coronavirus-covid19-remote-workingoffice-employees-employers>.
- [19] Devansh Saxena, Erhardt Graeff, Shion Guha, EunJeong Cheon, Pedro Reynolds-Cuellar, Dawn Walker, Christoph Becker, and Kenneth R Fleischmann. 2020. Collective Organizing and Social Responsibility at CSCW. In *Conference Companion Publication of the 2020 on Computer Supported Cooperative Work and Social Computing*. 503–509.
- [20] Norman Makoto Su, Amanda Lazar, and Lilly Irani. 2021. Critical Affects: Tech Work Emotions Amidst the Techlash. *Proceedings of the ACM on Human-Computer Interaction* 5, CSCW1 (2021), 1–27.
- [21] Dakuo Wang, Elizabeth Churchill, Pattie Maes, Xiangmin Fan, Ben Shneiderman, Yuanchun Shi, and Qianying Wang. 2020. From human-human collaboration to human-ai collaboration: Designing ai systems that can work together with people. In *Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems*. 1–6.