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Collectively Improve the Quality of Life at Work: How and Which Data to Collect and Analyze?

¹ Claus Bossen; ^{2,3} Christophe Chassot; ^{4,5} Caroline Datchary; ⁶ Sylvie Grosjean; ⁷ Shion Guha; ^{8,9} Myriam Lewkowicz; ^{2,10} Samir Medjiah;
¹ clausbossen@cc.au.dk; ^{2,3} chassot@laas.fr; ^{4,5} caroline.datchary@univ-tlse2.fr;
⁶ sgrosjea@uottawa.ca; ⁷ shion.guha@utoronto.ca; ^{8,9} myriam.lewkowicz@utt.fr;
^{2,10} medjiah@laas.fr;

¹ University of Aarhus, Denmark,

² LAAS-CNRS, Toulouse, France

³ INSA, Toulouse, France

⁴ LISST, Toulouse, France

⁵ Toulouse Jean Jaurès University, France

⁶ University of Ottawa, Canada

⁷ University of Toronto, Canada

⁸ LIST3N/Tech-CICO, Troyes, France

⁹ Troyes University of Technology, France

¹⁰ Paul Sabatier University – Toulouse 3, France

Abstract. Digitization of work has expanded the possibility to collect traces of activities, and AI techniques now extend the potential for analyzing this large amount of data. This phenomenon is mostly associated with forms of control and evaluation of the activity of the employees, thus generating forms of resistance. It is therefore important to think about forms of collection and processing of this data that could improve quality of life at work, by tackling information, cognitive, or communication overload. Indeed, this data could be used to improve deliberation in organizations, by providing digital representations of the activity, which is not easy to grasp in day-to-day professional work. The objective of this workshop is to gather researchers interested in discussing how data could be collected, analyzed, and discussed to improve the quality of life at work: which data? Which methods for its collection and its analysis? Under which conditions?

Detailed proposal

All kinds of organizations (public or private, bureaucracies or start-ups) increasingly trace work or activity of their members, under the guise of diverse objectives; either supporting productivity, security, or resilience (Meijer et al., 2021; Flyverbom & Murray, 2018). Data can be collected both manually or automatically through the usage of the different devices and IT systems that equip the work or the activity. These traces (of the use of an application, of the access and edition of data) are often used to inform metrics, or to produce analytics (like activity dashboards), that are increasingly sophisticated, and therefore also support more and more granular ways of monitoring, evaluating, and improving business processes, as well as assessing employees' productivity.

If the digitization of work has expanded the possibility to collect traces of activities, AI techniques now extend the potential for analyzing this large amount of data. However, it remains difficult to make sense of the data that is collected and analyzed by this AI. As (Koesten et al. 2021) say: "while sensemaking of textual information has been well-explored, there is a relative gap in research that aims to understand the strategies involved in making sense of data". Indeed, human work is needed to tune algorithms, and to be able to integrate AI into real-world systems (Fiebrink & Gillies, 2018), which finally ends up increasing the cognitive overload of the workers.

What is often highlighted is the harm that these techniques to collect and analyze data at work can cause to the workers. For instance, Levy (2022) has explored how technology (sensors, cameras, GPS systems, and on-board computers) is increasingly used to monitor truck drivers in the United States. She shows how the various surveillance technologies that are used to monitor and measure drivers' performance further reduce their autonomy and increase the risk of penalties for minor errors.

However, these issues could be addressed in another way; in a context where organizations will increasingly use AI, one can indeed discuss how and under which conditions the collection and the analysis of data (traces of the activity of workers) could be rather used to improve the quality of life at work (QLW), in particular by reducing their information, cognitive, and communication overload (Cicourel, 2004; Mark, 2003; Wilson, 2001).

Actually, in a context where the development of AI increases the processing capacities of this data tenfold, it is urgent to consider uses that are not only related

to control and a logic of increased performance, but also daily uses that make data meaningful and interpretable by reducing uncertainty, equivocality and supporting organizing processes (Weick, 1995). We still know very little about how users interpret usage data in real work settings; what concerns, or hopes, and forms of trust their place with usage data entail, and how these are used to support daily practices at work. We need to examine usage data in mundane everyday working to understand how people experience working with usage data, and how in proceeding through their daily activities they take advantage of data to support collective processes (Pink et al., 2017). This involves specific methods to understand how people work on and with usage data (e.g. Kristiansen et al 2018). It is indeed important to look at how AI reconfigures work practices by producing analytics, not only looking at the technology's potential capacity, but also on the labor of integration that humans must accomplish to correct errors or to allow a better integration of the technologies in their workplace practices (Mateescu & Elish, 2019). Employees must indeed interact, collaborate with, and integrate data and their analysis generated by AI systems into their work activities (Faraj et al., 2018; Jarrahi, 2018). In other words, to successfully integrate AI into the organization (not harming the workers), we need to consider not only its technical aspects, but also the human ("human infrastructure", Mateescu & Elish, 2019) and social aspects ("social interoperability", Grosjean, 2019 and "data valences", Fiore-Gartland & Neff, 2015). It is time to explore in more detail the synergies, the forms of collaboration that can take place between human workers and AI in the workplace (Seeber et al., 2020; Flygge et al 2021, Saxena et al 2021)), and then to incorporate this knowledge into the design of socio-technical systems that support the visualization and the analysis of data collected at work (Makatius et al., 2020; Bader & Kaiser, 2019), and therefore help collectively making decisions on how to evolve for a better QLW (Paschkewitz & Patt, 2020).

The question is then also to discuss how workers can negotiate the collection and the analysis of data, and how they can use this collected and analyzed data to reflect on their activity, both at the individual and the collective levels. These reflections could lead to collectively defining norms for QLW. We can envision that there is a heterogeneity of the employees' representations of the practices they consider problematic regarding QLW. In this context, how could communication conventions be developed within an organization and how could this collective elaboration be supported? This last question raises the issue of participatory designing systems for collecting, analyzing, and reflecting upon data at work, which is related to the conditions of appropriation of AI-based technologies: Does the possibility of "seeing in action" and revising the collection and the analysis could contribute to the transparency and the appropriation of these technological opportunities?

In this context, several questions can be raised:

1. How can data be collected at work, ensuring transparency for the workers, and the respect of local regulations (like the GDPR law in Europe)?

2. Which work needs to be done on the collected data at work? How to protect data, how to define which gets access to which data? What are the organizational and political stakes related to these issues?
3. How can we design AI systems producing useful and meaningful data that can support people mundane everyday working activities?
4. What do people need to know about an AI system to be able to work with usage data?
5. How AI systems convey usage data to its users in a meaningful and understandable manner?
6. How can the data generated by an AI system contribute to reducing equivocality and uncertainty and thus support sensemaking and collective decision-making processes?
7. How could the workers appropriate data and their analyses to improve their quality of life at work (QLW)? How could they collectively define norms for QLW, and which data and systems could support these negotiations?

Description of themes (non-exhaustive list)

In order to address the questions listed above, we are looking for contributions on the following themes, but not limited to:

- Empirical studies about forms of data collection at work, the use of metrics in the workplace, debates about the collection of data, the collective formation of norms, forms of resistance, bypasses, workarounds, ...
- Methodological challenges and innovative methodologies for the collection and analysis of data at work
- Conceptualization of different forms of agency , trust ...
- Participatory designs of software/AI systems to collect data, analyze it, visualize the analyses, discuss them, collectively define usage norms
- IT systems/algorithms programming the infrastructure to implement usage norms

The themes listed above can be addressed regardless of the type of work being considered. We are especially interested in reflections and testimonies (positive or negative experience with such data use) upon data collection for workplace democracy, but also for improving quality of working life.

Activities

Maximum number of participants : 15

Length of the workshop: 1 day

The workshop is planned as a full-day event divided into two sessions and will involve additional online activities organized both before and after the workshop. The contributions will be made available on the workshop website in order to prepare the attendees for discussions at the workshop. Beyond the themes highlighted here by the workshop organizers, other themes for the workshop emerging from the position papers will be posted on the website. We will ask participants to reflect on these themes. Depending on the scope and focus of the contributions, we will consider proposing a few guiding questions.

The first half of the workshop would be devoted to the brief presentations of participants' research. In order to stimulate the exchanges, each selected proposal will be assigned to a discussant who will have to provide a brief summary of the short paper's main topic and its contribution to the workshop, talk about the submitted short paper and raise questions to the author(s) during the workshop. The author(s) will be able to answer the questions by sharing empirical material or results, by explaining conceptual framework or by developing on methodological choices. The second half of the workshop will consist of collective development of a synthesis upon identified themes with a review of the literature. The group would be first divided then gathered for a final restitution.

Equipment needed

- projector
- paper board, ideally with markers and post-it notes

Means of recruiting and selecting participants

Participants will be recruited through:

- EUSSET mailing list
- CSCW mailing list
- Announcements on social network
- International Communication Association mailing list
- International Sociological Association mailing list
- Professional network of the organizers

A workshop website will be created and updated until the closing of the workshop. Participants will be selected based on their position paper submissions (up to 4 pages in length using the ECSCW Exploratory paper format). The selection will be made by the workshops' organizers on the basis of their interest, compliance with the workshop themes, and the extent (and diversity) of their backgrounds.

Goals

In this workshop, we wish to bring together researchers interested in these topics in a context of development of the use of AI for the analysis of these data at work and to make a first inventory of the useful literature to be mobilized for this emerging research field

Depending on the outcome of the workshop's discussions and on the interest of the participants, we may explore further publication outlets for the workshop papers. We were in particular thinking of a special issue of the CSCW Journal.

Background of the organizers

- **Claus Bossen** is professor at Aarhus University, Department of Digital Design and Information Studies. His current interests focus on the data work that accompanies datafication processes with a specific focus on the healthcare domain. Data work is often rendered invisible by the assumption that data is generated and processed automatically, even though datafication entails new tasks and even new occupations. More generally, his research pivots around ethnographic studies of work, IT and organizations analyzing the design, development, implementation, and use of IT systems. His research fields included CSCW, Participatory Design, Medical Informatics Critical Data Studies, and Science-Technology-Studies.
- **Christophe Chassot** is full professor in computer science and networks at the INSA Toulouse (France), where he is director of research and development. His research activities focus on next-generation communication networks and systems, and their applications. His contributions deal with dynamic and autonomous reconfiguration of new communication architectures taking advantage of recent opportunities in network softwarization and virtualization.
- **Caroline Datchary** is full professor of sociology at Toulouse Jean Jaurès University (France) where she is deputy director of the LISST research laboratory. She is interested in situations of dispersion at work with a view to improving working conditions. Her research fields concern various work situations and combine different methodological approaches.
- **Shion Guha** is an Assistant Professor in the Faculty of Information and Department of Computer Science at the University of Toronto where he directs the Human-Centered

Data Science Lab. He is interested in how street level bureaucrats and social workers make decisions from AI algorithms in high stakes decision-making environments such as in child welfare, healthcare, or homelessness. He often combines computational, technical methodologies with critical, interpretive approaches.

- **Sylvie Grosjean (Ph.D.)** is full professor at the University of Ottawa and the chair of the Com&Tech Innovations Lab (<http://ctilab.ca>). Her current research interests include the design and implementation of telehealth innovations as well organizational communication by studying the role of technologies (e.g. Medical Information Systems, telemedicine technologies) on care coordination and clinical decision-making. She develops a codesign approach in health and uses various qualitative methods to analyze human/machine interactions (e.g. video-ethnography).
- **Myriam Lewkowicz** is Professor at Troyes University of Technology where she heads the pluridisciplinary research group Tech-CICO and the master program. She is interested in defining digital technologies to support existing collective practices or to design new collective activities. This interdisciplinary research proposes reflections and approaches for the analysis and the design of new products and services to support cooperative work. The main application domains for this research for the last fifteen years have been healthcare (social support, coordination, telemedicine) and the industry (digital transformation, maintenance). She is a member of the program committees of the main conferences in Cooperative Work, Social Software, and Human-Machine Interaction, chairs the European scientific association EUSSET, and is deputy editor-in-chief of the CSCW journal, « The Journal of Collaborative Computing and Work Practices ».
- **Samir Medjiah (Ph.D.)** is associate professor in computer systems and networks at Paul Sabatier University - Toulouse III (France) and a researcher in LAAS-CNRS. His main research interests include overlay networks optimization, network virtualization, and software defined networking. He has worked on various R&D projects related to application-driven networking and Network-Application co-optimization.

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