

Title: Work in the Age of Intelligent Machines: Key Dilemmas for the Information Community

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Abstract:

This half-day workshop aims to promote discussion and disciplinary convergence on the topic of work in the age of intelligent machines. The use of intelligent machines-- digital technologies that feature data-driven forms of customization, learning, and autonomous action-- is rapidly growing and has and will continue to impact a number of industries and domains. The iSchool community is uniquely situated in this landscape as a community of researchers, educators, and practitioners with a tradition of studying, supporting, and educating professionals working at the nexus between people, information, and technologies. This workshop aims to answer three questions: 1) what is new about intelligent machines today and how are they changing the nature of work; 2) how do these issues impact the iSchool community specifically; and 3) what should a forward-facing agenda for the iSchool community on the topic of work in the age of intelligent machines include? This workshop builds on an ongoing NSF Research Coordination Network (RCN) (NSF 17-45463, <https://waim.network/>).

Purpose and Intended Audience:

Emerging breakthroughs in artificial intelligence have promising affordances for organizing work [1]. However, there is currently little grounded understanding and research about the sociotechnical implications of these smart technologies beyond the hyperbolic fascination and fear of replacing workers in various work contexts [2]. Our aim in this workshop is to bring together an interdisciplinary group from the iSchool community, including researchers and practitioners, with a shared interest in the relationship between work and intelligent machines. More ambitiously, we intend for the workshop to provide an impetus and venue for disciplinary convergence around the workshop's topic. Addressing the challenges of work and intelligent machines requires integrating perspectives and disciplinary expertise related to labor, motivation, cognition, machine learning, data science, human-computer interaction, and information science among others in coherent ways.

Proposed Format:

The workshop format will be interactive and participatory, encouraging dialogue among participants. Those interested in participating in the workshop will be asked to submit short position papers (approx. 500 words in length) describing their background, current work, and relevance/interest in the workshop's topic of work in the age of intelligent machines. Example of questions that can motivate position papers include (but are not limited to):

1. What is new about emerging intelligent systems and algorithms (e.g. deep and machine learning)? What are their implications for the changing nature of work (e.g., temporal, spatial and administrative dimensions)? What are important accompanying social and organizational changes we are witnessing and how these shape the ways information is created, curated, used and shared in and for work? What can be learned from previous sociotechnical theories and what are unique characteristics of emerging intelligent systems?
2. How do these issues influence the information community specifically? How can the community contribute to the discourse on work and intelligent machines, and what type of insight can be drawn from recent theoretical and methodological developments in other research and intellectual communities (e.g., computer, organizational, and cognitive sciences)
3. What should a forward-facing agenda for the information community include on the topic of work in the age of intelligent machines? What are the interdisciplinary challenges and opportunities in pursuing this agenda? Who may fund this research? What research and practice-oriented audience can be reached?

Our aim is to accommodate a maximum of 40 participants. Depending on the composition of submitted abstracts, we will form small working groups based on common themes or topics among the submitted position papers.

The workshop will begin with an overview of the aims, goals, and agenda by the workshop organizers, followed by brief "round robin" style introductions among the whole group.

In the thematic small working groups (or as a single group, depending on the final size/composition of the workshop cohort), participants will discuss the particulars of their projects and abstracts in more depth. They will be given a set of prompts to address in their group discussion, including the identification of common issues, similarities or divergence from their own disciplinary perspectives, and the challenges and opportunities of extending this expertise into a common language and agenda. The workshop will conclude with a group discussion synthesizing the day's discussions and identifying key themes to be included in the workshop's report.

Time	Activity
0-15 minutes (15)	Welcome, settle in, agenda for the day
15-60 minutes (45)	Round Robin Introductions
1 hr-1 hr 30 minutes (30)	Common Themes/Concepts Presentations
1 hr 30 min - 1 hr 45 min (15)	Coffee Break
1hr 45 min - 3 hr 15 min (90)	Working Group Discussions (specific format dependent on workshop composition)
3 hr 15 min - 4 hr 15 min (60)	Synthesis and Key Themes for Workshop Report

Goals or Outcomes:

This workshop aims to answer three questions: 1) what is new about intelligent machines today and how are they changing the nature of work; 2) how do these issues impact the iSchool community specifically; and 3) what should a forward-facing agenda for the iSchool community on the topic of work in the age of intelligent machines include.

The research problems, language and research proposals developed during the workshop will be summarized in a short report put together by the workshop organizers after the conference. The report will be shared with the workshop participants and distributed to the broader NSF sponsored Work in the Age of Intelligent Machines (WAIM) network (<https://waim.network>). Participants will also be encouraged to engage with the network and each other before and after the workshop.

Relevance to the iConference:

The workshop speaks directly to the iConference 2019 theme: **inform | include | inspire**. It will (1) **inform** participants about the emerging topic of work in the age of the smart machine and its growing relevance to the iSchool community, (2) **include** a diverse set of iSchool community stakeholders with diverse interdisciplinary backgrounds, interests, and experiences, and (3) **inspire** them to converge on what should be included in a forward-facing agenda to help the iSchool community better understand and design work in the age of the smart machine.

The question of how work will be changed by rapidly increasing technological capabilities has been a long-standing concern of the information field [e.g., 3]. The advent of disruptive technologies such as platform technologies and proliferation of deep and machine learning algorithms is argued to provide new opportunities for human-machine symbiosis in work settings [4]. These transformations raise a number of questions that we hope will foster discussion at the workshop. What follows are examples of relevant themes (these will be extended and refined based on submitted position papers and workshop discussion):

1. The transformation of work practices and service provision in a number of domains.
 - a. Human-robot interactions in the work settings
 - b. Artificial intelligence and augmented intelligence

2. The multiple scales at which such transformations take place-- including individual-, team/group-, organization-, and profession/occupation-level transformation:
 - a. Algorithmic management and decision making
 - b. Intelligent machines and interpersonal relationships at work
 - c. Smart machines and mass surveillance in organizations

3. The ethical implications of technology-enabled transformations such as job loss, the changing demands of professional readiness in the age of intelligent machines and their implications for educational curricula:
 - a. Intelligent machine, automation, new jobs and education
 - b. Digital labour, inequality and power

Duration: Half-day event

Attendance: 10-40 attendees; Preferred: 30 attendees

Special Requirements: No special requirements needed

References:

1. Davenport, T.H., Kirby, J.: Only humans need apply: winners and losers in the age of smart machines. Harper Business New York, NY (2016).
2. Brynjolfsson, E., McAfee, A.: The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies. W. W. Norton & Company (2014).
3. Zuboff, S.: In the age of the smart machine: The future of work and power. Basic books New York (1988).
4. Jarrahi, M.H.: Artificial Intelligence and the Future of Work: Human-AI Symbiosis in Organizational Decision Making. Business Horizons. 61, (2018).