Abstract

On–demand labor has become a new instantiation of piecework. Without shared factories and water coolers, how do these workers coordinate, build solidarity, and take collective action? We will engage in fieldwork with pieceworkers in data entry, domestic services, and on–demand driving to understand how they counter algorithmic systems and engage in collective action. Our goal is to both understand the factors that drive collective behavior in supposedly distributed labor platforms, and to build infrastructures that enable the growth of worker collective action in digitally mediated on–demand labor. Our results shed light on the potential for digital piecework cooperativism, as well as the policies necessary for it to succeed.

Motivating Work: Historical Analysis of Piecework

Piecework has historically disempowered workers and empowered employers, and many the same dynamics of disenfranchisement and frustration are poised to return today. In our most recent work [2], we found that a number of aspects of piecework — a form of work payment that began more than a century ago — bears striking resemblance to the contemporary labor we call "gig work". By subdividing work and paying for each task, employees are driven to work faster and longer, affording them little control over working conditions. And for most of its history, piecework yielded no benefits, occupational health and safety, or social insurance. When piecework combined with job routinization, workers became interchangeable and deindividuated. This combination of piecework and routinization produced the dominant payment system during the industrial era, starting with agriculture and home production but quickly moving into factories. However, by the turn of the 20th century in the United States, campaigns for workers' rights yielded regulations on conditions, and by the late 20th century, piecework was associated primarily with migrant labor and sweatshops. This contracted piecework economy has remained relatively stable since.

Today, with the growth of on–demand labor, piecework is reemerging in new forms. Networked computational infrastructure is now mediating each unit of work and worker. Uber's taxi drivers are paid per ride and assigned jobs by an algorithm [18, 8]. Information workers, such as those on Amazon Mechanical Turk and Upwork, are paid per task, performing vast quantities of data and administrative work [20]. Increasingly numerous workers make money through one–off tasks like housecleaning and food delivery, all mediated by online platforms. Much of this work has been limited in complexity to easily verifiable work, stymieing gig workers' career opportunities in many of the same ways that historically limited information workers' careers [7].

In our examination of crowd work and gig work as a reinstantiation of piecework [2], we identify a number of parallels that relate to this question. First, that the first "human computers" were geographically distributed and only retained for several years to stifle career development opportunities [7]; second, that effective uses of historical piecework were generally limited to easily measured work due to a general mistrust [13, 25]; third, this mistrust led to such a starkly adversarial relationship between workers and managers that it may have precipitated the wave of labor advocacy which defined the first half of the 20th century [10, 11]. What remains then are serious questions about the future of gig work as informed by piecework's history. We have limited knowledge of how gig workers today are adapting to digitally mediated, constantly changing labor markets. Similarly, we know very little about gig work's potential to support complex work, let alone how to turn that potential into reality.

This work carries policy implications for the emerging, and as yet largely unregulated, gig economy. Will gig work represent empowered, independent professionals who freely control their destinies, or will gig work become a geographically distributed "digital sweatshop" [4]? Whereas researchers had relatively little control over the markets that emerged throughout the 20th century, researchers of digital sites of work have the ability not only to influence, but to architect these settings [19]. It can be argued that with a few lines of code, we can effect outsize change on the future of gig work — a form of work that continues to grow by the year [29, 28].

Research plan

We intend to build a system that tracks gig workers' professional histories across myriad work platforms, aggregating & consolidating that data, and allowing workers to curate their professional identities, instantiated by a "digital résumé". A number of open questions stand to be informed by this endeavor: first, do tools and systems like these help various stakeholders (such as workers, or requesters) in measurable ways? And second, what can we learn about collective governance from a system that is designed and operated collectively with workers themselves?

At a high level, we can study the usefulness of this system using standard experimental approaches. First, through quantitative methods (for example, comparing workers' earnings over time); and second, through qualitative methods (for example, through interviews to determine whether workers find and exploit specialty niches as a result of this tool). We can also explore employers perspectives in tangible ways; for example, given concerns about the quality of work [12, 17, 16], we will investigate whether a system that better communicates worker expertise allows employers to rely more confidently on crowdwork.

More broadly, we can think of this as an opportunity to engage in participatory design and democracy, and to learn best practices through experimentation. We can take this opportunity to study collective governance in online settings — extending, as Hardin describes it, from the "on–shot" cases of collective action that we instantiated in our earlier work [26] to "ongoing" collective action [9]. While considerable effort has gone toward collective governance (e.g. [23, 21, 1, 22, 24]), many of these mechanisms rely on collocation to some extent or another; the best practices of collective governance for communities that never meet (e.g moderators and administrators on Wikipedia) remains unclear.

Interdisciplinarity

This research will call on methods and skills originally from and generally found in disparate fields. As we showed with our paper examining the relationship between piecework and gig work [2], the lens of a social scientist can inform conversations about digitally mediated work in ways that many computer scientists are not otherwise able to offer. At the same time, the perspectives of computer scientists — and the challenges digitally mediated spaces bring with them — offer to reinvigorate deeply theoretically grounded discussion and offer field sites with which to experiment and test these theories.

In order to design a system that empowers workers, a researchers must first attempt to understand a wide range of workers' circumstances: The needs of workers; the contexts in which they work; their relationships with one another, with other groups, & with institutions such as governments; and more generally the paradigmatic views of gig workers. Only then can one reasonably hope to design a system consistent with the views and broader culture of gig work.

Lee et al. and Gray et al. have identified a number of ways that workers subvert and circumvent the intents of system–designers, both in digital workplaces and where work is simply mediated digitally [18, 6]. These patterns of behavior elude algorithmic tracking and measurement because they deliberately avoid the a priori assumptions made by the designers of systems, who attempt to structure these sites of work in ways to create incentives for preferred behavior. Identifying and understanding the details of this behavior thus begins with a qualitative, ethnographic endeavor.

Anticipated Contributions & Implications

This research is of significant importance given the recent trends in the "gig economy". With more and more people joining the workforce in this capacity [29, 28], concerns about "the future of work" [27, 15] continue to grow. Without compelling career trajectories in this space, the optimistic prediction seems to be that we will have little say in the outcome of this shift in work. Our hope is that, concretely, the artifact produced by this research raises the limit on the complexity of work that can reliably be crowdsourced. More broadly, we expect to offer two major contributions to the Human–Computer Interaction community: first, an existence proof that a gig work market for complex, specialized workers is possible; and second, insights into how best to scaffold and foster ongoing collective governance.

This project's will speak to the critique that the internet, far from the democratizing force that Barlow predicted it would be, has become an infrastructure facilitating the corporate centralization of power [3, 14, 5]. The success of this project will therefore not only bring a more nuanced understanding of the shifting climate and culture of labor, but may — in a small way — deliver on the promise Barlow made that cyberspace and the Internet would be a tool for democratizing access to information, and with that, empowering more than the tech elite who engineered it.

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