

# I Want to, but First I Need to: Understanding Crowdworkers' Career Goals, Challenges, and Tensions

VERONICA A. RIVERA, UC Santa Cruz, USA

DAVID T. LEE, UC Santa Cruz, USA

Career development is vital for ensuring a happy and productive workforce, and for maintaining relevance in a rapidly changing economy shaped by technological progress. Yet career development is largely ignored in crowdwork. Crowdwork platforms like Amazon Mechanical Turk (AMT) do not support crowdworkers in reskilling and changing careers. In this paper, we study the career goals of AMT workers and the challenges they face in trying to transition out of crowdwork and into high-skill jobs offline or into specialized freelance work. We performed a qualitative study in which we surveyed 20 AMT workers and interviewed 6 of them about their career goals, how they are currently pursuing them, and the challenges they have faced. We found that crowdworkers aspire to transition out of AMT but face challenges due to lack of career guidance, and limited time and financial resources. Drawing on literature in career studies and organization science, we discuss how crowdworkers' challenges are further aggravated by the environment on AMT, and provide implications for future research and design that may better support crowdworkers in making a career change.

CCS Concepts: • **Human-centered computing** → **Empirical studies in HCI**.

Additional Key Words and Phrases: Crowdwork; Gig Work; Online Labor Platforms; Career Development; Career Change; Skill Development; Future of Work

## ACM Reference Format:

Veronica A. Rivera and David T. Lee. 2021. I Want to, but First I Need to: Understanding Crowdworkers' Career Goals, Challenges, and Tensions. *Proc. ACM Hum.-Comput. Interact.* 5, CSCW1, Article 150 (April 2021), 22 pages. <https://doi.org/10.1145/3449224>

## 1 INTRODUCTION

*"Choose a job you love, and you will never have to work a day in your life". -Confucius*

Career development is an important part of employees' happiness and well-being [20, 34], and a significant factor in employers' business success [33, 50], since happy employees are more productive. For these reasons, employers typically invest in providing structures and resources, such as career ladders and mentorship programs, that support employees' career goals within the organization. For employees, these benefits are not only important for moving up in their current organization, but also for moving across organizations and sectors [66] and for maintaining relevance in a rapidly changing economy shaped by technological progress [11]. Jobs are becoming increasingly polarized into lower-skilled and higher-skilled jobs [16, 28], and workers are realizing that learning and retraining need to happen continuously if they are to avoid getting pushed into lower paid and lower-skilled occupations [11, 21, 28].

---

Authors' addresses: Veronica A. Rivera, [veariver@ucsc.edu](mailto:veariver@ucsc.edu), UC Santa Cruz, USA; David T. Lee, [dlee105@ucsc.edu](mailto:dlee105@ucsc.edu), UC Santa Cruz, USA.

---

Permission to make digital or hard copies of part or all of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for third-party components of this work must be honored. For all other uses, contact the owner/author(s).

© 2021 Copyright held by the owner/author(s).

2573-0142/2021/4-ART150

<https://doi.org/10.1145/3449224>

Along with the changing dynamics of career development is a change in the environments for work itself. Tech innovation is expected to automate and dismantle 38% of jobs within the next ten years [24], and has led to the growth of the online gig economy. In 2016 at least 20 million adults in the U.S earned money by working on online on-demand tasks like those found on Amazon Mechanical Turk (AMT), a number that is expected to rise with the growth of AI [24]. On-demand work platforms offer some benefits, such as flexible work hours and the ability to work remotely, but are plagued with poor working conditions. Workers on platforms like AMT face issues such as low pay, lack of basic worker protections, and power imbalances [29, 32, 49, 70]. With more and more people expected to form part of this workforce, it becomes even more important to consider how to create a “*future crowd workplace in which we would want our children to participate*” [38].

The majority of research around crowdworker well-being has focused on diminishing some of the precariousness associated with this kind of work. This includes research on facilitating workers’ reviews of requesters [31], strengthening worker-requester relationships [49], supporting organization for collective action [63], and developing guidelines for a worker-centric peer economy [1]. However, there has been little research on supporting career development in crowdwork.

Supporting career development in crowdwork is important for two reasons. First, enabling crowdworkers to pursue their career goals is another way to support their well-being. Second, changes in the structure of work are making it imperative for all workers, including crowdworkers, to easily retrain and change jobs across industries [11, 28, 57]. Since crowdwork is a relatively new form of work, it is important to understand the types of careers crowdworkers may want to pursue, and what challenges they may face in retraining and working towards their career goals. In this paper we explore these ideas by addressing the following research questions:

- RQ1: What are crowdworkers’ ultimate career goals?
- RQ2: What challenges do crowdworkers face in working towards their career goals?
- RQ3: How do environmental factors within crowdwork platforms support or inhibit workers’ learning and pursuit of career goals?

To answer these questions we conducted a qualitative study consisting of an open-ended survey with 20 workers on AMT and semi-structured interviews with 6 of those 20 workers. We find that many crowdworkers have long-term career goals they would like to accomplish that require them to transition out of AMT. They join the platform as a precursor to pursuing those goals. However, they struggle to make progress towards their goals while working on AMT due to lack of career guidance and limited time and financial resources. Since tasks on AMT pay so little and good-paying work is hard to come by, time is of the essence for these workers, especially for those who consider it to be their main source of income. Furthermore, they need to constantly be “on”, ready to work on the next decently-paying task in order to meet their goal earnings for the day or week. Many workers also have additional constraints such as office jobs and children to look after. When these responsibilities are coupled with the unpredictable nature of tasks on AMT, it becomes difficult to find spare time to develop the skills they want to, and need to, learn to transition out of crowdwork.

This study extends existing research on crowdworker well-being by offering a new perspective of career support as a form of well-being. Our contributions to CSCW are two-fold. First we, contribute insight into crowdworkers’ career goals and the challenges they face in pursuing them. Second, we build on our findings to recommend design and research directions for better supporting crowdworkers in pursuing their career goals outside AMT. Our hope is that these contributions can spark new conversations on the many dimensions in which the experience of crowdworkers still falls significantly behind what we expect for workers in traditional work environments.

## 2 BACKGROUND AND RELATED WORK

Although career development in crowdwork is relatively understudied, career development in traditional forms of work offline has been studied extensively by researchers in career and organization science. In this section we begin by describing some of the most prominent factors supporting career change in traditional work. Then, we describe the literature in HCI and CSCW that our work draws on including research aiming to improve conditions on crowd platforms and worker well-being, as well as research on complex crowdwork and skill development in crowdwork.

### 2.1 Factors That Support Career Mobility in Traditional Forms of Work

*2.1.1 Strong Interpersonal Relationships.* Interpersonal relationships can have a significant, positive impact on an individual's career development, especially career mobility. For example, family and friends can help by suggesting jobs that align with that individual's values, interests, and skills [51]. Past co-workers can serve as role models [3, 12] supporting their career decision-making processes [23, 53, 56], and can boost an individual's self-efficacy [19, 56, 68]. Close connections can provide emotional support leading to greater confidence in overcoming career obstacles to pursue goals [27] rather than settling for less interesting career paths that are easily attainable [44]. And finally, professional connections can help open doors by providing information about job opportunities, facilitating meetings with influential people, or sharing the norms of a particular industry [79], ultimately increasing the options an individual is able to obtain when changing careers [27].

*2.1.2 Appropriate Financial Resources.* The availability of financial resources also strongly influences how an individual copes with a career change [18, 43]. The retraining necessary for changing careers is expensive. This is why studies show that financial pressure is the most important factor for individuals in deciding whether or not to pursue further education and training, choosing temporary work between jobs, and determining how they feel about their overall career change prospects [18]. "No contextual factor appeared more striking in its impact on an individual's ability to cope with the transition than did finances" [18].

*2.1.3 Ability to Engage in Adaptive Career Behaviors.* One of the reasons social support and financial resources are so crucial to career mobility is that they influence the ability of individuals to engage in adaptive career behaviors, i.e. self-regulatory behaviors such as planning [43, 67, 74], career exploration, and goal-setting that have been shown to increase the likelihood for obtaining satisfying career outcomes [43]. For example, the ability to picture the details of a potential future career move and to proactively take steps towards those goals, e.g. by learning new skill sets, helps workers determine whether decisions they make will benefit them in the long run and to make informed decisions quickly when needed [18]. The ability to use temporary employment purposefully was also critical for keeping the need to generate income from becoming a barrier to career change [18].

### 2.2 Improving Conditions on Crowd Marketplaces and Worker Well-Being

Crowdworkers face incredible challenges, many of which stem from low wages, an imbalance of power that favors requesters, and the difficulty of coordinating towards collective action [30, 31, 38]. Prior research has looked at how to address these to create a safer and fairer crowd workplace.

Earning money is one of the primary motivators for crowdworkers, [24, 31, 35, 49], but presents a challenge since fair-paying work is hard to come by. To find good-paying work, crowdworkers need to spend significant time and effort searching for tasks and strategizing to increase earnings [35]. Past research shows that crowdworkers earn well below the U.S minimum wage [29, 49], with one analysis finding a mean hourly wage of \$3.13/h on AMT [26]. To address this, researchers

have made efforts to help workers earn higher wages by studying the tasks and working patterns that yield higher hourly wages [26, 65], and the impact of using different tools and resources on workers' income [35]. This line of work informs design considerations for creating worker tools that could help increase earnings. For example, in [61] researchers created a system that uses data from crowdworkers completing work to predict the hourly wage for a task. Other work calls on requesters to take responsibility for paying workers a fair wage [71] or to provide requesters on AMT with the ability to automatically pay workers minimum wage [77].

Low wages on crowdwork platforms are a result of the uneven distribution of power between workers and requesters and the lack of transparency workers face in crowd markets [65]. Crowdwork platforms like AMT are designed to meet the requesters' needs, not those of the workers [49]. On AMT many requesters engage in unfair labor practices, like rejecting completed work without paying workers, yet because AMT itself is not involved in resolving disputes workers have little power in these situations [52]. Additionally, the use of asymmetric rating systems makes it so workers have very little information about requesters [49] inhibiting their ability to make decisions that could minimize risk. One area of work in HCI and CSCW has focused on how to give more power to workers to create fairer working conditions on crowdwork platforms. This includes a system that gives crowdworkers a way to review requesters' and hold them accountable for their actions [31]; a tool that promotes fairer reviews from requesters about crowdworkers' performance [75]; approaches to address issues of power and fairness by building trust [22, 52]; and efforts to support workers in organizing around collective action [63].

Prior work has also explored crowdworker well-being. This includes understanding factors that affect worker satisfaction [10], how productivity tools affect workers' quality of life [78], and how crowdwork can be made more accessible for individuals with disabilities [82]. Career development has been linked to worker well-being in traditional work [4, 81], but to our knowledge has not been studied closely in crowdwork. We see our work as an initial step towards understanding and addressing this aspect of worker well-being in crowdwork.

### 2.3 Complex Crowdwork

One of the things that makes career development difficult on crowdwork platforms like AMT is that many tasks are simple and deskilled, which inhibits the learning and opportunities for retraining that often accompany complex professional work [38]. In addition, crowdwork platforms do not have the same opportunities for career advancement and professional development that typically exist in brick-and-mortar organizations [6].

Complex work, such as software development and visual design, is difficult to achieve through crowdwork because existing crowdsourcing microtask workflows decompose work into small independent tasks, making it difficult for workers to adapt their work structure, deliverables, and goals beyond the exact plan specified by the workflow [58, 76]. Researchers have studied different approaches to crowdsourcing that achieve more open-ended and complex goals. For example, in [76], the authors organize crowds in computationally-enhanced organizations that allow crowdworkers to work iteratively and adaptively on complex projects involving software, product, and game design. This kind of work is a crucial first step towards promoting team structures that enable crowdworkers to work on complex open-ended projects. However, another important component of enabling crowdworkers to work on complex, interdependent problems is training them to learn skills that can help them tackle such problems.

## 2.4 Skill Development in Gig Work

Previous work has explored task-related learning on crowdwork platforms and career development in the context of high-skill gig work, like freelancing. However, career development—and especially career mobility—remain understudied in the context of low-skill gig work, like crowdwork.

Prior work has established that gig workers are interested in learning. Crowdworkers identify learning new skills as one of their motivations for joining on-demand work [37]. In [46–48] the authors find gig workers are learning-oriented and exhibit self-regulated learning strategies. Many of them develop skills that help them navigate obstacles and uncertainties imposed by the platform [72]. Prior work has also explored designs for incorporating learning into tasks. To enhance task and platform-related learning in crowdwork, researchers have developed and studied several tools. These include LevelUp, which teaches crowdworkers basic photo improvement skills in Photoshop [17]; Scopist, which teaches crowdworkers real-time captioning skills [6]; and Atelier, where tasks are structured as paid, real-work experiences and workers receive mentorship guidance from an expert crowd mentor [73]. Continuing in the vein of peer support for learning, researchers have investigated peer learning [8], peer management [41], and task-related peer coaching [15].

The literature also contains investigations into career development for high-skill gig workers. In [72] researchers found that high-skill gig workers learn techniques to build their reputation, promote themselves through various web channels, stay productive, mitigate transaction risk, and build professional relationships. Researchers found similar results in [2, 55], especially regarding the role social connections play in freelancers' skill development. Sometimes freelancers lean on their clients [7], or on other freelancers [69] for career support, even holding online networking events. Researchers ultimately observe that online freelancing is compatible with career transitions and entrepreneurial skill development, but that further platform support is needed [7].

## 3 CONTEXT AND RESEARCH METHODS

We conducted a study of the career goals of AMT workers and the challenges they experience in pursuing their goals. This consisted of open-ended surveys with 20 AMT workers and interviews with 6 of those workers. Our goal was to gain insight into their career goals and the challenges they have faced in pursuing those goals. In this section we begin by describing a small pilot study that motivated the research in this paper. We follow by describing our process and methodology for studying the career goals and career-related challenges of AMT workers.

### 3.1 Pilot Study

Prior to carrying out this research, we conducted a small pilot study to help understand whether crowdworkers have unmet career goals and if this space warrants further study. The pilot study consisted of two surveys (N=50 for the first, N=6 for the second) and three tasks (N=4) that required workers to learn basic data analysis and apply those skills to a large dataset.

Results revealed that some workers on AMT have career aspirations, such as climbing the career ladder in an organization, and learning complex skills. Workers were excited about the opportunity to work on tasks that were more involved than those typically found on AMT. They expressed excitement about the three tasks we presented them with, explaining that *“it is nice to do something that is really productive and not the same old stuff that Mturk has”*. Some participants even messaged the first author to express their gratitude for the opportunity to work on these tasks, and their interest to work on similar tasks in the future. These interactions suggested to us that workers on AMT value learning and career development, and that our research questions were worth pursuing.

Name	Gender	Age	Time on AMT	Hours Per Week	Education	Career Goal
Alvin	M	25-34	1-3 yrs	63-84	Bachelor's	Make a good living
Renee	F	35-44	4-6 yrs	35-56	High School (GED)	Freelance programmer
Christina	F	25-34	1-6 months	25-40	Bachelor's	Obtain pharmacy degree
Anne	F	25-34	1-3 yrs	54-72	some college, no degree	Find what she's passionate about
Kristi	F	35-44	1-3 yrs	140	High School (GED)	Visual merchandising executive
Lola	F	25-34	4-6 yrs	15	some college, no degree	Registered dietitian; get degree
Ben**	M	35-44	1-6 months	21	Bachelor's	Data analyst; get degree
Jana	F	35-44	4-6 yrs	60	some college, no degree	Social worker; get degree
Brenda	F	35-44	4-6 yrs	21	Master's	Database administrator
Earnest	M	25-34	7-10 yrs	90	Bachelor's	Career in broadcasting
Eleanor**	F	25-34	1-3 yrs	10	Master's	Data Analyst
Perry	M	25-34	1-3 yrs	14	Associate's	Network systems administrator
Tasha**	F	25-34	1-6 months	30	some college, no degree	Government teacher; get degree
Derrick	M	25-34	1-3 yrs	20	Bachelor's	Ebay reseller; avoid desk job
Hope**	F	45-54	4-6 yrs	56	Associate's	Own art gallery
Lindsay	F	25-34	1-3 yrs	16	Master's	Professor and writer; get PhD
Viola**	F	25-34	1-3 yrs	112	Bachelor's	Find what she's passionate about
Lorena	F	25-34	4-6 yrs	30	Associate's	Computer programmer
Charlotte**	F	45-54	1-3 yrs	30	Bachelor's	Social worker; get Master's
Francisco	M	35-44	1-6 months	36	Bachelor's	Own an online business

Table 1. Characteristics of AMT worker participants who completed the open-ended survey. 11 participants out of 20 indicated that AMT is their primary occupation and source of income. All names are pseudonyms. \*\* denotes individuals who participated in an interview, in addition to completing the surveys

### 3.2 Methods for Study of Career Mobility on Amazon Mechanical Turk

We conducted open-ended surveys with 20 Amazon Mechanical Turk workers, and semi-structured interviews with 6 of those workers. All participants are U.S. workers. Questions were based on factors that have been found to support career mobility in traditional work. For example, we included several questions around the strength and nature of interpersonal relationships.

*3.2.1 Participants and Data Collection.* We began with a screening survey to select workers for the main portion of the study and obtain background information to contextualize their responses. The screening survey contained 8 demographic multiple-choice questions and 2 open-ended questions concerning workers' long-term career goals, and whether their work on AMT supports these goals. We received 112 responses to the screening survey. These responses are not part of the analyzed data. Twenty-five of these participants were invited to complete a follow-up survey with 11 open-ended questions about their experiences on AMT, why they joined, and their current efforts working towards their long-term goals. These participants were chosen based on the following criteria: 1) AMT being their primary occupation or spending at least 10 hours per week working on the platform, and 2) the quality of their responses to the two open-ended questions in the screening survey; specifically, whether they wrote at least as many sentences as the instructions requested, the readability of their responses, and the overall perceived effort of their responses.

Of the 25 workers we invited to participate in the follow-up survey, 20 completed the survey. These 20 responses are part of the analyzed data. From those 20 workers we then filtered out 5 who indicated they did not want to be contacted for an interview and 5 more whose responses did not meet the instructions' length criteria. We invited the remaining 10 workers to participate in an interview and received responses from 6. For the two surveys and the interview, AMT workers were compensated at a \$15/hour rate.

Code Category	Relevance to Research Question	High-Level Themes (Round 1)
(1) What led crowdworkers to join AMT in the first place and what has kept them there.	Understand the relationship between AMT and participants' career goals (e.g. are they using AMT as a stepping stone into their dream career, what is the role of AMT in the greater context of their career goals)	Financial hardship Desire to be self-sufficient Job constraints
(2) What do AMT workers look for when choosing tasks.	Evaluate whether workers are choosing tasks that might help them in pursuing their career goals (e.g. picking tasks that are somehow related to their interests or could help develop certain skills)	Maximize hourly wage Interest in task content
(3) What are AMT workers' experiences like on the platform.	Understand the lived experiences of our participants to contextualize their career-related challenges (e.g. how might their experiences on AMT affect how they think about and pursue their career goals).	Need to always be "on" Self-directed learning Power imbalance
(4) What are AMT workers' career goals, career plans, and career-related challenges.	Understand AMT workers' career goals, how they plan to work towards those goals, and the challenges they are facing or anticipate facing along the way. Directly helps us answer RQ1 and RQ2.	Uncertainty & feeling stuck Financial constraints Time constraints Desire for career outside AMT

Table 2. Categories used in first round of analysis, description of how each category relates to our research questions, and list of high-level themes identified for each category in first round of analysis.

Our semi-structured interviews with the 6 AMT workers were 20-35 minutes long and conducted over the phone. All interviews were performed by the first author. Interview questions built on the open-ended survey responses, focusing on understanding workers career goals in greater depth, the challenges they have faced in working towards those goals, and the barriers they anticipated facing in the future. We also focused on understanding their lived experiences as crowdworkers on AMT and how their work on AMT affects their day-to-day life. We were particularly interested in evaluating whether AMT workers might benefit from some of the same resources that have been found to support career development of workers in traditional work environments.

**3.2.2 Data Analysis.** We generated interview transcripts using automatic transcription software and checked them for accuracy, with the first author making corrections as necessary. The open-ended survey responses were analyzed primarily by the first author, with support from two undergraduate research assistants. The interview transcripts were all analyzed by the first author. All codes and emerging themes across data sources were documented in a spreadsheet and discussed regularly with the second author. All data was analyzed using thematic analysis and deductive coding [9], focusing on the four categories below, which were derived from our interviews and surveys. Details about how the categories relate to our research questions can be found in Table 2.

- (1) What led crowdworkers to join AMT in the first place, and what has kept them there.
- (2) What do AMT workers look for when choosing tasks.
- (3) What are AMT workers' experiences like on the platform.
- (4) What are AMT workers' career goals, career plans, and career-related challenges.

We analyzed the data through multiple rounds of coding. In the first round we conducted open coding around each of the four categories and clustered the resulting codes together into twelve high-level themes (Table 2). We then performed a second round of coding to identify sub-themes for the twelve high-level themes. We focused this analysis on the underlying what, why and how behind each of the themes identified in the previous round. A total of thirty sub-themes emerged,

many of which pertain to multiple high-level themes from the first round of analysis. The patterns from themes and sub-themes identified for the fourth category were directly used to answer RQ1 and RQ2. To answer RQ3 we conducted a third round of analysis, looking for patterns resulting from the intersection of sub-themes emerging out of the first three categories with those emerging out of the fourth category. In the findings section we include quotes from interviews and open-ended survey responses that are both evocative and representative of the main findings across the dataset.

## 4 FINDINGS

We found that participants want to transition out of crowdwork to pursue a career that can deliver greater job security and fulfillment. For some, these goals stem from lifelong dreams they want to see realized. Others have less concrete goals, but know that crowdwork is not the end goal. They join AMT as a means to an end, yet face challenges in taking the first steps out of crowdwork and towards their career goals due to lack of career guidance, financial hardship, and time pressure. On AMT participants find themselves needing to prioritize their longevity as crowdworkers over working towards their career goals.

We begin by offering a description of the career goals and motivations of our participants, focusing both on those who are still figuring out their career identity and those who have a clear vision and laid out plan towards their goals. We then describe the three challenges we saw participants face in pursuing their career goals and conclude by describing the ways in which participants creatively try to learn and grow through their work on AMT, and how they ultimately end up having to prioritize their efficiency on the platform over anything else.

### 4.1 Seeking Greater Job Security and Fulfillment of a Lifelong Dream

Participants expressed wanting to pursue a career outside of crowdwork in order to obtain greater job satisfaction and security than that offered by crowdwork, and to fulfill lifelong goals. Many participants shared they want a job that will allow them to be financially independent.

*"I would love to be a Network Systems Administrator to experience a lively adulthood. It's where I see myself able to garner enough funds for a home of my own with no one else in it and a flourishing career." -Perry*

Participants seek a fulfilling career and do not want to settle for crowdwork. Tasha explained, "it [AMT] is not rewarding enough work that I could stomach it for a long-term career type thing." Likewise, Earnest said, "With time, I'll probably phase it [AMT] out to find something more fulfilling. It's a decent line of work but it's not the endgame for me."

Some participants shared they have career goals they have wanted to pursue for a long time, often times stemming from life-long interests. For instance, Hope dreams of owning an art gallery and explained, "photography has been a hobby of mine ever since I was a little girl...I love photography, it's my biggest passion and if I could do that full time, I would". Similarly, Tasha shared that she wants to get a degree in education and aspires to teach high school government and politics classes because she has been interested in politics ever since she was young.

*"I decided when I was four I was going to be the first female president of the United States. I think I'm going to miss that though. But I mean, it's been a lifelong interest of mine where I was following politics. I got my picture in our local paper from getting a letter from the white house when I was in first grade cause I kept writing. This has gone on forever. I was voted most likely to be president in high school. So politics has always kind of been my thing." -Tasha*

Although participants expressed wanting to pursue a career outside AMT, their level of clarity around the specifics of their goals vary. While some participants might know they want a fulfilling



job that offers financial security, many do not have a specific career direction in mind and want to explore potential career options and interests first.

*"I'm not sure [what I want to do], and this is the biggest conundrum to me. I have interests that branch out to all different types, but nothing strong enough to make me want to commit to it for the rest of my life." -Anne*

In the meantime as they figure out their career plan these participants joined AMT to make money to either overcome financial hardship, or to be productive in their spare time. Many of them plan to continue working on AMT until they can figure out what they want to do career-wise. When asked how much longer she expects to continue working on AMT, Jennifer replied, *"If things don't pan out, probably for a while until I figure out what I'm good at and can apply for other jobs that fit my skill set."*

Other participants know exactly what job they want, what skills they will need to develop, and have envisioned a path for getting to their goal. Many of them plan to attend school and obtain a degree as part of their retraining process. For instance Jason has laid out a clear plan for pursuing a career as a data analyst:

*"For now, the first thing I want to do is pay off my student loan debt. After that, I want to make sure I have enough money to relocate to a new area and land a job. After I settle in with a job and a place to live, I'll probably attend college, trying to avoid student loans, and eventually get my bachelor's degree. At that point, I'll try to find an entry level data analysis job." -Jason*

However, obtaining a degree is costly, and many of these participants face financial obstacles, such as outstanding debt, that make it difficult for them to move forward with their career plan. They join AMT hoping that they will be able to make enough money to both pay off existing debt and save money to pay for school.

*"I lost my online business and I had an mTurk account from years ago. I needed to make money quickly before figuring out my next career...I would ultimately like to become a computer programmer. I want to work as a freelancer or with a reputable company, ideally remotely. I hope to become successful with that. I also eventually want to go to school and mTurk will play a big role in paying for that." -Lorena*

Regardless of how clear their career goals are, all participants indicated that their goals lie *outside* AMT. They joined AMT as an initial step, hoping that eventually they may be able to move on and transition out of crowdwork. However, they find it challenging to make progress.

*"I have [begun to work towards career goals], but I feel like I don't get anywhere, so I stay stagnant for a while and just settle for mTurk." -Anne*

We found that participants' challenges pursuing their career goals outside crowdwork stem from lack of appropriate career guidance, minimal financial resources, and limited time to dedicate to learning.

#### 4.2 Challenge: Lack of Career Guidance

Trying to pave one's career path without appropriate guidance and mentorship is difficult and confusing. Many participants feel lost in thinking about their careers and expressed difficulty figuring out their next steps.

*"I really don't know what exactly I would like to do. I don't really have a dream job because I haven't really found something I'm passionate in...I was thinking something related to computers because I use them frequently, and obviously programming is a huge job market, so I was leaning towards that, but I'm not really sure...If I had more confidence that*

*I was actually good at programming and would want to do it full time I would probably be much more willing to jump into it.” -Alvin*

Alvin thinks he might be interested in computer programming. But with no prior first-hand exposure to the field, and no guidance from someone who knows the area, he is hesitant to pursue this interest further. Alvin does not know what being a computer programmer entails, and whether it is a career that might suit him.

Other participants expressed related challenges entering a new industry. For instance, Viola shared that she is interested in a job that would enable her to help people, but she is unsure how to turn her interests into a career. From speaking to her we learned that before joining AMT she worked for several years as a QA chemist. Now she wants to transition into a completely different industry she had no prior exposure to throughout her scientific career. Her lack of experience and knowledge in her area of interest make it difficult to even know where to begin.

*“I have also been really thinking about doing something that I enjoy and helping people with support groups or some sort of non-profit organization, but I don’t know where to start...I’m slowly figuring that out as I go.” -Viola*

Eleanor also expressed she has faced difficulties trying to break into data analysis due to her inexperience, specifically her lack of related work experience and industry connections.

*“Because there’s not that much of a need for that in the market unless you’ve got good experience, good connections, et cetera. I haven’t been able to break into that [data analysis] yet, but I’m working on it.” -Eleanor*

Several of our participants expressed that while they have emotional support from friends and family members who want to see them succeed, they lamented not having adequate mentors who could help them navigate their career direction. Having a mentor could help them overcome challenges defining their career goals and finding relevant work experience in their areas of interest.

*“I wish I had a mentor. I wish I had someone that I could have at least had advice that knows how to like, navigate this whole mess. But no, I’ve never actually had anyone that actually could do that, I’ve never had anyone that was like, hey, this is a university you should actually consider these majors or what’s so important about it or why it’s important to have a job in the first place. I didn’t really have that type of mentorship or person that’s older or experienced to help me get through a lot of things in my life.” -Viola*

Viola further shared that her biggest challenge in pursuing her career goals stems from her lack of the “connections and experiences from working a real job”, insinuating that she is unable to develop the career-oriented relationships and contextual skills she needs just through working on AMT. She feels she needs to work a “real job” in order to develop those kinds of relationships and skills.

Overall, participants expressed wanting to pursue a more stable and fulfilling career outside crowdwork, but struggle to work towards those goals because they lack a mentor who could guide them in the right direction. They joined AMT as they try to figure out their interests and how to pursue them, yet these challenges persist as AMT fails to cultivate the kind of mentoring relationships that might help workers and that career studies suggests are instrumental to career development and successful career change.

### 4.3 Challenge: Financial Strain

While some participants face challenges developing their careers due to uncertainty and lack of career guidance, others face significant financial barriers. Several participants joined AMT hoping that it might be able to help assuage financial roadblocks and allow them to build up their savings

for future educational pursuits, but they find that the income they earn on AMT is insufficient to make steady progress towards their goals.

Many participants who have a specific job they want to pursue and a laid out a career plan envision getting a degree through formal schooling to acquire the skills they will need. For instance, Tasha wants to go back to school to get a degree in education so that she can be a high school government and politics teacher. Charlotte wants to obtain a master's degree in social work to be able to provide counseling to students and their families. Hope aspires to go back to school to earn a bachelor's degree in something related to art or photography, and obtain more business training to open up her art gallery. Christina wants to apply to pharmacy school. Ben wants to move to his closest major city and enroll in an applied math degree program. And Lorena aims to pursue a degree in computer science to become a computer programmer.

However, formal education is expensive, and many participants also face financial hardship from unemployment, medical debt, and prior school loans that they need to overcome before they can move forward with their plan to put money into a degree.

*"Right now I am in crisis mode. I have too much debt to do anything else...I have to pay off my debt first. I have to be online all [day] to work and can't do other things right now."*  
-Hope

For many participants, pre-existing financial barriers are the biggest challenge they face in trying to pursue their career goals.

*"That's [financial debt's] really the challenge. I mean, I can make everything else work, but on the inside, you know if it weren't for that, I really think that this is something I probably already would be teaching if it weren't for the hangup of the loan and, you know, always hitting some roadblock in the way of getting back on a repayment plan with the loan that I can actually follow. That's really what's getting in the way."*-Tasha

Several participants joined AMT to help pay off outstanding debt and save money for their career goals. AMT was an enticing option because it enabled them to work from home, and thus, manage the other constraints in their lives such as needing to take care of young children, health issues, and being in a location with limited employment opportunities. However, participants end up struggling to put their plan into action because pay on AMT is so low that they can barely make ends meet, much less be able to save money for retraining and learning. For instance, Charlotte explained that her first step towards pursuing her goal of being a social worker is to get a master's degree in social work. However, her family is "so cash strapped" that relying on AMT is not enough for her to complete her degree.

**Interviewer:** *So do you think that mTurk will be able to help you be financially secure enough to get your master's?*

**Charlotte:** *No. I don't think that I'm going to be, let me word it this way, one cannot base their income on mechanical Turk because that is, that's a disaster waiting to happen. So if a person is relying on mechanical Turk to pay their monthly bills, it's not going to happen. It's just not possible. Um, while there are some that do thrive, the majority of individuals will be very lucky if they pulled 20, maybe \$30 a week. So no I can't solely rely on Amazon to meet my needs.*

In some cases, the financial challenges are so great that participants need to find additional income sources. For example, Ben shared that he needed to obtain another job at a retail store in addition to working on AMT in order to make any significant progress paying off his existing student loan debt, so that he can more quickly relocate and pursue his bachelor's degree in applied math.

#### 4.4 Challenge: Time Strain

Some participants shared that they struggle to find time they can devote to self-directed learning and planning towards their future career. The challenges they face around time are oftentimes compounded by needing to work long hours and irregular schedules on AMT in trying to meet their financial needs.

Many participants, especially those who heavily depend on AMT as a source of income, experience difficulty balancing work and caretaking responsibilities with making time for learning and retraining. For instance, Renee described how one of her biggest deterrents in pursuing her goal of being a freelance software developer is being able to self-study programming at home.

*“My biggest challenge is time. When I’m free during the day, I’m usually working on mturk and can’t focus solely on learning. During the weekends, my kids are home and it’s hard to get a distraction-free area just to absorb the information.” -Renee*

Lorena faces a similar problem. She said, *“A big challenge I face is having enough time to work, take care of my son, take care of the house, and learn programming”*. Both Lorena and Renee face financial challenges that make it so that they need to prioritize their financial stability by working as much as they can on AMT in order to maximize their earnings. In addition, both of them face care taking responsibilities, which further cut into the time they might have available to focus on learning and retraining. Likewise, Viola explained that she is still trying to figure out exactly what she wants to do career-wise, but it is difficult for her to make progress because in addition to not having career guidance, she lacks the time to think about her goals because she is always taking care of others and putting their needs before her own.

*“I never had the time to like pursue what I need to do and, and just self improve myself. I never had the time...I basically had to work all the time.” -Viola*

Viola further explained that she does not have time to think about what she is interested in or what career she might want because she is the sole breadwinner of her household and needs to work long hours on AMT to be able to maintain both herself and her husband.

The nature of crowdwork makes it so that the participants who have the greatest financial need have to not only work long hours, but also maintain irregular and unpredictable schedules. Many participants described how their schedule is set by how much money they need to make that week, and how much they are able to progress towards their goal earnings each day.

*“I basically work until 8-9PM...but sometimes if I see things happening I’ll go until midnight. Last Friday night was really crazy and I didn’t go to sleep until 2:30AM so I plan on stopping myself much earlier. The weekends are more laid back, I sleep in and don’t start until 7 or 8AM and it ends alot earlier like 9PM.” -Viola*

Similarly, Lindsay explained that she often finds herself needing to work on AMT during the weekend when she has not met her goal earnings for the week, on top of working a full-time job offline. She said that the hardest thing for her in trying to pursue her goal of being a professional writer is not having the time to further her education.

*“The challenge is always time. There does not seem to be enough time in the day. This is why it is particularly important to prioritize tasks on mturk. I need more time and money each day to work toward my goals. There are not enough days in the week.” -Lindsay*

For many participants working on AMT is not a 9-5 job, so it is difficult for them to dedicate time to pursuing their career goals during “after work hours” because there is not a clear notion of after work hours. Work hours revolve around how much an individual needs to make that day and how long it takes them to reach their goal earnings. Additionally, beyond needing to work long hours and irregular schedules many workers need to continuously look for tasks and be ready to

go when good work (fair-paying work) is available. For instance, Hope described how she needs to spend a lot of time each morning just looking for tasks on AMT in order to have them all lined up and ready to go.

*“A lot of time I have spent hunting for work because unfortunately it’s not like a regular job where you just log in and you know exactly what you have to do and then you go home and the job is done. You have to be very proactive and multitask in looking for the work. Like right now I have three studies that I’m going to do. As soon as I’m done with this phone call, I already have them queued up in my queue ready to go. So you have to constantly be looking for work, stop, focus on the work, and then immediately go back again.”* -Hope

Similarly, Renee explained that whenever she is home she is within earshot of the computer and ready to work whenever a good task comes up. She described working on AMT as being “on-call”. This experience of always being on not only makes it difficult for workers to plan their schedules consistently, but is also draining. Alvin explained, “I often feel pretty unmotivated to study programming after a full day of completing HITs, so I’m kind of at a stand still.”

#### 4.5 Learning Through the Cracks and The Tension Between Learning and Earning

Despite the barriers they face to learning and developing their careers, participants displayed a strong desire to learn and oftentimes try to find creative ways to do so as they work on AMT. For instance, Charlotte shared that she learns a lot from reading the study descriptions that are included in the surveys she completes. She likes to take her time completing surveys rather than just “fly[ing] through those surveys checking whatever boxes” to really think about the questions. They encourage her to do some “soul-searching”. Likewise, Tasha explained that she enjoys participating in surveys and studies related to politics and seeing what questions are asked. She said that she will oftentimes email the requesters of those surveys asking for a link to the findings of the project so that she can read about them. She explained that being exposed to surveys related to politics and current events helps her think about potential curriculum she may want to use someday as a teacher.

*“...it [the survey] really made me think more about the things that I learned, the things that I studied, you know, and, also just how to present current events, and also poll taking and how it works. Um, relevant to the things we see on TV versus how being on this side and taking polls and surveys and doing studies for work might affect or skew the results. Um, and that’s definitely something that I didn’t think about too much and that I’m thinking about now. That could definitely be something that I could work with and incorporate.”*  
-Tasha

Yet, Tasha further explained that these kinds of tasks are difficult to find because most tasks on AMT are “vague and broad”. She said that “overall there’s not a ton because a lot of it is mindless busy work essentially, but there are a few gems that you can dig out of the dirt.”

But even though participants expressed a desire to learn and improve themselves, they need to balance ingenious workarounds to learning with practicality. For instance, Charlotte shared that because she likes to take her time and think deeply about survey questions, she will often run out of time on tasks. She then needs to reach out to requesters to see if they will pay her for her work. This both puts her at risk of not getting paid for those tasks and reduces her time efficiency. When choosing tasks participants usually opt for the safe route. They end up prioritizing those that have the highest pay rate and are the most time-efficient over tasks with interesting subject-matter or those they might be able to learn something from, even if it is less enjoyable.

*“Pay. It’s always pay. If something has a good hourly, it’s green in MTurk suite etc, that gets priority. This isn’t really fun for me, it’s about trying to scrape what I can by the end*

*of the day. So I have to always prioritize the things that are worth the most and are most fair for the time. Or, alternatively, give an opportunity for higher pay - like this one, where there was an opportunity to do this follow-up, which is worth the time and effort.” -Tasha*

At the end of the day, participants want to make sure they are coming as close as possible to meeting their goal earnings on AMT. For similar reasons, participants also look for work from requesters they trust either because they have worked with those requesters in the past or because those requesters have received good reviews from other workers.

*“Lastly, how is the specific requestor treating the workers? In recent years there have been a number of new requestors who put work out and either do not want to reimburse for time and effort or they simply reject and keep the data. If you are not a worker you do not understand that for every 1 rejection it takes 200 approved hits or assignments to offset.” -Charlotte*

In some cases, participants might try to learn a skill for the purpose of being more efficient on AMT and maximizing their earnings. For example, Hope was encouraged to learn a bit of JavaScript so that she could be self-sufficient and not have to rely on requesters every time a task was broken because the requester had used the API incorrectly.

*“I’ve also done my own research, um, my own education through like the Khan Academy or Udemy. And those definitely helped cause it’s definitely, they helped me with macros and they help you a lot. For me, the thing that helped me the most is if something doesn’t work in a survey or a batch, I know why. I can tell the requesters, Hey, your parameters aren’t set correctly for this frame and you need to change it cause I really want to do those hits, let’s go.” -Hope*

Even though Hope does not see herself needing to know computer programming for her goal of running an art gallery, investing some time to learn JavaScript has helped boost her productivity on AMT so it is worth doing.

## 5 DISCUSSION AND DESIGN IMPLICATIONS

Our findings show that many AMT workers do want to transition out of crowdwork and that they join the platform as an initial step to figure out their career identity or to work towards concrete goals. Unfortunately, their lack of mentorship, tight financial constraints, and tight time constraints force them to prioritize work on AMT and prevent them from making progress towards their educational and career pursuits.

In this section, we reflect on these findings in relation to what is known about career mobility in traditional work and the affordances of crowdwork platforms. We identify three ways in which crowdwork platforms fail to support career mobility: the lack of sustained collaboration means that crowdworkers can’t form the professional relationships they need; the consuming nature of crowdwork means that crowdworkers are unable to balance the tension of learning and working to dedicate needed time to career goals; and the lack of complex project-based work limits the situated learning that workers can obtain and their ability to accumulate a portfolio of work. Since we found that participants’ career goals involve transitioning out of AMT, we focus our discussion of design implications on supporting that kind of career change.

### 5.1 Towards Professional Networking on Crowdwork Platforms

We have already discussed the importance of interpersonal relationships to successful career development in traditional work (see **Section 2.1.1**).

And despite the limited affordances for interpersonal interaction within crowd platforms, research shows that crowdworkers do still find ways to support one another to reduce transaction costs,

get work done, and recreate the social side of work [24]. Workers tap into their social network for guidance navigating confusing tasks, to work around the platform's technological shortcomings, to be more efficient in completing tasks, and to commiserate with others who can understand what being a crowdworker is like [24].

However, there are two different types of interpersonal relationships that support career development in different ways. Psychosocial support is akin to emotional support, and enables individuals to feel capable of overcoming challenges, while instrumental career support provides coaching on career-related issues, exposure and visibility in new industries, and job leads [27]. *The problem is that while crowdworkers have been able to provide psychosocial support to one another, they are much more limited in their ability to provide instrumental career support.*

In traditional work, individuals often work together in teams over an extended period of time. They learn about each others' strengths and interests, and over time, look to each other for guidance, networking, and help identifying career advancement opportunities [39]. In contrast, crowdwork is socially decontextualized, which inhibits the development of professional relationships. AMT crowdworkers do communicate with each other, but the work itself is almost always done individually. In the rare tasks that involve collaboration, crowdworkers are anonymous to each other and only work together for a single task. There is no long-term interdependent work.

Prior work in HCI and CSCW has focused on supporting collective action to combat abuse within crowdwork platforms [30, 31, 63]. We see an opportunity to consider how to support crowdworkers in going beyond survival *within* platforms to thriving *outside* of them. In Ghost Work, Gray and Suri call for new mechanisms to help crowdworkers support one another: "*We all stand to benefit from learning how to align the range of motivations animating on-demand workers with the equipment to help them help one another as they make their way through this demanding work*" [24]. Our findings show that crowdworkers on AMT have career goals beyond crowdwork (see **Section 4.1**), and would benefit from more instrumental career support (see **Section 4.2**).

One approach to achieving this is to design for sustained collaboration and professional networking among crowdworkers. We see potential in extending research on teams for complex crowdwork and online collaboration [59, 62, 64, 76, 80] as a way to support these facets of career development. How might we design tasks, teams, and platform interfaces to support the formation of mentoring and networking relationships among crowdworkers beyond simple guidance on how to be a crowdworker? And how might we introduce mechanisms that enable and encourage workers to sustain these relationships over a long period of time?

Another direction involves understanding the role of knowledge sharing and how professional networking may arise. In [48], Margaryan suggests enabling crowdworkers to create profiles and portfolios highlighting qualifications to support their learning and career development. We might imagine how this would allow crowdworkers to showcase their skills to other workers and learn about their peers' strengths as well. Taking this a step further, we could incorporate profile features for workers to share their career goals. It would be interesting to study how these different profile elements may help crowdworkers connect with others who share similar goals, or with those who could help them learn desired skills.

## 5.2 Towards Enabling Greater Allocation of Time to Pursuits Outside Crowdwork

A second problem is that crowdworkers are unable to allocate the time they need to engage in the adaptive career behaviors needed to pursue longer-term goals. We already discussed the importance of adaptive career behaviors for career development (see **Section 2.1.3**), and it isn't hard to see that you need significant time and attention to plan, search, apply, and obtain any necessary reskilling.

Yet, dedicating the time and attention required for a career change is challenging as a crowdworker. AMT workers operate in a low information environment which requires intense focus. Workers

are responsible for finding tasks themselves. But since tasks are limited in quantity; vary widely in pay rate, requester fairness, and task content; and have idiosyncratic posting times, workers need to always be ready if they want to nab high-quality tasks. Workers do not know at the start of their day or week how much money they will be able to make. Working on AMT is like participating in a real-time first-come first-serve auction on items whose value is unclear. These many unknowns force workers to devote their attention to monitoring the platform to avoid significant loss to their earning potential. Workers end up working long or atypical hours just to find tasks [5], making it very difficult to spend any time at all thinking about their career goals. These realities were echoed in the experiences shared by our participants (see **Section 4.4**). They explained the need to constantly look for work and to switch between doing work and queuing up tasks. One participant described the experience like being “*on-call*”.

This is further exacerbated by the low wages and power imbalances that make it hard to accumulate money on AMT to pursue a new career (see **Section 2.2**), and the fact that many crowdworkers live in a precarious financial situation where their household income is not enough to cover basic needs [5]. This was reflected in the experiences of the workers we interviewed (see **Section 4.4**): they reported that they sometimes had to seek additional work to supplement their income and were unable pay for degrees or other programs relevant to their career goals. As you will recall, financial resources are also critical for successful career development (see **Section 2.1.2**).

These challenges coalesce in a vicious cycle where workers need to put more and more time into the platform to try to meet financial needs at the cost of having less time to learn or work towards their career goals. Participants struggle to balance learning and earning because the opportunity cost of not finding good work is too high (see **Section 4.5**). They prioritize tasks that pay well, can be done quickly, and are put out by fair requesters, over actively looking for tasks they can learn from. We see two opportunities for alleviating the tension between learning and earning: 1) making the value of tasks more clear and 2) reducing the burden of needing to look for work.

In prior work researchers have begun to address the issue of transparency on AMT by developing tools and forums to help crowdworkers obtain more information about requesters and task payment [25, 31, 65]. Much of this work, such as [65], focuses on helping crowdworkers earn higher wages. We see an opportunity to extend this literature by exploring how greater transparency can help crowdworkers gain more control over their time and help them better direct their attention.

A second direction is to develop methods that support crowdworkers in maintaining a more regular schedule and in reducing the burden of finding work. The wealth of research on scheduling, bidding, and mechanism design in the AI and algorithmic game theory communities [13, 54, 60] could be a starting point. Some workers already use automated scripts to assist them in selecting tasks<sup>1</sup>. However, while these do support task search, they do not mitigate the problem of schedule irregularities. How might we automate task scheduling for crowdworkers based on the number of hours they want to work each day, the time blocks they would like to work, and their goals for earnings? Can this help give them more control over their schedule without excessively limiting the kind of work they have access to?

### 5.3 Towards Situated Learning in Crowdwork Tasks

There are two principal benefits that individuals obtain from experience with large, multifaceted projects for career mobility. First, it facilitates the situated learning of professional and technical skills that can be transferred across work settings; these include communication skills, project management skills, and domain-specific expertise. Second, the projects themselves can serve as a credential that encourages employers to trust a prospective employee, especially if the prospective

---

<sup>1</sup>For more information on scripts for supporting AMT crowdworkers, see <https://turkerview.com/mturk-scripts/>



employee can articulate concrete contributions. Such credentials would be particularly valuable for AMT workers because their job itself may be a poor credential. For instance, recent evidence suggests that driving gigs maybe not be a substitute for traditional employment on resumes for low-skilled workers [45] and that many workers on AMT choose to not list their crowdwork experience on their resume; they worry that crowdwork would not be respected and feel that it is not relevant to their careers goals [36].

*The problem is that crowdworkers do not have access to complex project-based work.* Crowdwork platforms like AMT largely contain fine-grained and intellectually decontextualized tasks (see **Section 2.3**) that prevent workers from gaining a bigger picture view of their work or from describing their contributions to larger projects. Recent work has indicated that crowdworkers do learn some skills in their work (see **Section 2.4**). Our study confirmed this, finding that participants learn facts from the studies they participate in, and even reflect on how they relate to their lives and society at large. However, it also revealed that many tensions still remain between learning and earning (see **Section 4.5**). This simple form of learning is just not a substitute for the professional skills and career development provided by project-based work.

We call on the CSCW community to consider how to design crowdwork experiences in which lower-skill crowdworkers can contribute to large projects. Steps have already been taken in this direction: for example, [17] considers how to train workers to perform (isolated) high-skill tasks. Bringing large projects to low-skill workers might involve applying ideas from education. For instance, HCI research has explored how to support online learners in obtaining real-world work experience while getting paid and building a portfolio [40]. Other work has considered how we might pay learners to take MOOCs [14]. And in a recent HCI paper on scaling apprenticeship learning, researchers introduced a new form of coordination called micro-role hierarchies to help short-term novices contribute to complex projects as they develop new skills [42]. They demonstrated its ability to coordinate learners to build static web pages for refugee resettlement agencies. How might we extend HCI research focused on supporting online learners to begin designing new coordination schemes that make crowdwork more meaningful and educational?

Another promising path we see is to find ways to help low-skill crowdworkers transition to high-skill crowdwork on sites like Upwork, which can in turn be a pathway to promoting project-based work. This is especially promising given the new structures being developed for organizing high-skill crowdworkers to collaborate on large projects [76], and research showing that high-skill crowdwork enables career exploration through project-based work [7].

## 6 LIMITATIONS AND FUTURE WORK

We acknowledge the methodological limitations of our study. First, our mechanism for recruiting participants introduces potential biases. One of our criteria for selecting participants to move on in the study was whether they provided thoughtful, detailed responses to the open-ended questions in our surveys. While this helped us select participants who might be open to sharing more, it is possible that we were also unknowingly selecting more educated individuals (those who could write more eloquently), or those who are more extroverted and vocal within the community. Our study is also limited by the amount of detail we are able to provide about participants, such as limited information related to their additional jobs outside AMT.

Additionally, our study did not include workers who have been able to transition out of crowdwork successfully. In the future we may want to consider how to recruit ex-crowdworkers who are no longer active on the platform to understand the challenges they faced in pursuing their careers and how they overcame them. Furthermore, while our findings indicate that crowdworkers want to transition out of AMT, there may be exist crowdworkers who do want to make a career on the platform. Future work could consider whether such a population exists and how to support

them. Even though our findings only focus on the experiences of a small percentage of AMT crowdworkers, we believe that learning about their career goals and the challenges they face can inform new research agendas on crowdworker well-being and the future of work.

## 7 CONCLUSION

We performed a qualitative study to gain insight into the career goals and challenges of crowdworkers on Amazon Mechanical Turk. We found that AMT participants want to pursue a career outside crowdwork and join AMT as a starting point, but struggle to make progress due to lack of career guidance and limited time and financial resources. Furthermore, we found that learning and earning are at odds on AMT, each vying for workers' limited attention resources.

We unpack our findings of the career-related goals and challenges of AMT works by connecting to literature on career mobility in traditional work and the factors that support career changes in brick-and-mortar organizations. We contextualize our results within prior work in HCI and CSCW to suggest research and design directions. Our findings and discussion help inform implications for future work to better support crowdworkers in pursuing their career goals.

## ACKNOWLEDGMENTS

We would like to thank the participants for their time, and for sharing their stories and experiences with us. Without them this work would not have been possible. Thank you to the anonymous CSCW reviewers for their generous feedback, which helped us significantly improve this paper. Thank you to Colin Chen, Melanie Wong, Gurdikha Kaur, Jason Chan and Puja Vasan for their help performing, transcribing and coding interviews and to Dustin Palea, Kehua Lei and Mingrui Yu for their feedback on early drafts. Finally, the first author would like to thank Alex Ozdemir for helping frame the research ideas and providing valuable feedback and edits on multiple drafts of the paper. This study was supported by the UC Santa Cruz Chancellor's Graduate Internship Program.

## REFERENCES

- [1] Ali Alkhatib, Justin Cranshaw, and Andrés Monroy-Hernández. 2018. Laying Groundwork for a Worker-Centric Peer Economy. *CoRR* abs/1807.08189 (2018). arXiv:1807.08189 <http://arxiv.org/abs/1807.08189>
- [2] Susan J Ashford, Brianna Barker Caza, and Erin M Reid. 2018. From surviving to thriving in the gig economy: A research agenda for individuals in the new world of work. *Research in Organizational Behavior* 38 (2018), 23–41.
- [3] Anat BarNir, Warren E. Watson, and Holly M. Hutchins. 2011. Mediation and Moderated Mediation in the Relationship Among Role Models, Self-Efficacy, Entrepreneurial Career Intention, and Gender. *Journal of Applied Social Psychology* 41, 2 (2011), 270–297. <https://doi.org/10.1111/j.1559-1816.2010.00713.x> arXiv:<https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1559-1816.2010.00713.x>
- [4] Sabine El Baroudi, Svetlana N. Khapova, Chen Fleisher, and Paul G. W. Jansen. 2018. How Do Career Aspirations Benefit Organizations? The Mediating Roles of the Proactive and Relational Aspects of Contemporary Work. *Frontiers in Psychology* 9 (2018), 2150. <https://doi.org/10.3389/fpsyg.2018.02150>
- [5] Janine Berg, Marianne Furrer, Ellie Harmon, Uma Rani, and M Six Silberman. 2018. Digital labour platforms and the future of work. *Towards Decent Work in the Online World. Rapport de l'OIT* (2018).
- [6] Jeffrey P. Bigham, Kristin Williams, Nila Banerjee, and John Zimmerman. 2017. Scopist: Building a Skill Ladder into Crowd Transcription. In *Proceedings of the 14th Web for All Conference on The Future of Accessible Work (W4A '17)*. Association for Computing Machinery, New York, NY, USA, Article Article 2, 10 pages. <https://doi.org/10.1145/3058555.3058562>
- [7] Allie Blaising, Chinmay Kulkarni, and Laura Dabbish. 2020. Career Trajectories in Online Freelance Platforms. *Microsoft New Future of Work Workshop* (2020).
- [8] David Boud, Ruth Cohen, and Jane Sampson. 1999. Peer Learning and Assessment. *Assessment & Evaluation in Higher Education* 24, 4 (1999), 413–426. <https://doi.org/10.1080/0260293990240405> arXiv:<https://doi.org/10.1080/0260293990240405>
- [9] Virginia Braun and Victoria Clarke. 2006. Using thematic analysis in psychology. *Qualitative research in psychology* 3, 2 (2006), 77–101.

- [10] Alice M Brawley and Cynthia LS Pury. 2016. Work experiences on MTurk: Job satisfaction, turnover, and information sharing. *Computers in Human Behavior* 54 (2016), 531–546.
- [11] Anna Brown. 2016. Key findings about the American workforce and the changing job market. Pew Research Center.
- [12] Ronald J. Burke. 1984. Mentors in Organizations. *Group & Organization Studies* 9, 3 (1984), 353–372. <https://doi.org/10.1177/105960118400900304> arXiv:<https://doi.org/10.1177/105960118400900304>
- [13] Banu Çaliş and Serol Bulkan. 2015. A research survey: review of AI solution strategies of job shop scheduling problem. *Journal of Intelligent Manufacturing* 26, 5 (2015), 961–973.
- [14] Guanliang Chen, Dan Davis, Markus Krause, Efthimia Aivaloglou, Claudia Hauff, and Geert-Jan Houben. 2016. From learners to earners: enabling mooc learners to apply their skills and earn money in an online market place. *IEEE Transactions on Learning Technologies* 11, 2 (2016), 264–274.
- [15] Chun-Wei Chiang, Anna Kasunic, and Saiph Savage. 2018. Crowd Coach: Peer Coaching for Crowd Workers' Skill Growth. *Proc. ACM Hum.-Comput. Interact.* 2, CSCW, Article Article 37 (Nov. 2018), 17 pages. <https://doi.org/10.1145/3274306>
- [16] H David and David Dorn. 2013. The growth of low-skill service jobs and the polarization of the US labor market. *American Economic Review* 103, 5 (2013), 1553–97.
- [17] Mira Dontcheva, Robert R. Morris, Joel R. Brandt, and Elizabeth M. Gerber. 2014. Combining Crowdsourcing and Learning to Improve Engagement and Performance. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '14)*. Association for Computing Machinery, New York, NY, USA, 3379–3388. <https://doi.org/10.1145/2556288.2557217>
- [18] Christopher A Ebberwein, Thomas S Krieshok, Jon C Ulven, and Ellie C Prosser. 2004. Voices in transition: Lessons on career adaptability. *The Career Development Quarterly* 52, 4 (2004), 292–308.
- [19] Charles Eesley and Yanbo Wang. 2017. Social influence in career choice: Evidence from a randomized field experiment on entrepreneurial mentorship. *Research Policy* 46, 3 (2017), 636 – 650. <https://doi.org/10.1016/j.respol.2017.01.010>
- [20] Berrin Erdogan, Talya N Bauer, Donald M Truxillo, and Layla R Mansfield. 2012. Whistle while you work: A review of the life satisfaction literature. *Journal of management* 38, 4 (2012), 1038–1083.
- [21] Carl Benedikt Frey and Michael Osborne. 2013. The future of employment. (2013).
- [22] Snehal (Neil) Gaikwad, Durim Morina, Rohit Nistala, Megha Agarwal, Alison Cossette, Radhika Bhanu, Saiph Savage, Vishwajeet Narwal, Karan Rajpal, Jeff Regino, Aditi Mithal, Adam Ginzberg, Aditi Nath, Karolina R. Ziulkoski, Trygve Cossette, Dilrukshi Gamage, Angela Richmond-Fuller, Ryo Suzuki, Jeerel Herrejón, Kevin Le, Claudia Flores-Saviaga, Haritha Thilakarathne, Kajal Gupta, William Dai, Ankita Sastry, Shirish Goyal, Thejan Rajapakshe, Niki Abolhassani, Angela Xie, Abigail Reyes, Surabhi Ingle, Verónica Jaramillo, Martin Godínez, Walter Ángel, Carlos Toxtli, Juan Flores, Asmita Gupta, Vineet Sethia, Diana Padilla, Kristy Milland, Kristiono Setyadi, Nuwan Wajirasena, Muthitha Batagoda, Rolando Cruz, James Damon, Divya Nekkanti, Tejas Sarma, Mohamed Saleh, Gabriela Gongora-Svartzman, Soroosh Bateni, Gema Toledo Barrera, Alex Peña, Ryan Compton, Deen Aariff, Luis Palacios, Manuela Paula Ritter, Nisha K.K., Alan Kay, Jana Uhrmeister, Srivalli Nistala, Milad Esfahani, Elsa Bakiu, Christopher Diemert, Luca Matsumoto, Manik Singh, Krupa Patel, Ranjay Krishna, Geza Kovacs, Rajan Vaish, and Michael Bernstein. 2015. Daemo: A Self-Governed Crowdsourcing Marketplace. In *Adjunct Proceedings of the 28th Annual ACM Symposium on User Interface Software & Technology (UIST '15 Adjunct)*. Association for Computing Machinery, New York, NY, USA, 101–102. <https://doi.org/10.1145/2815585.2815739>
- [23] Donald E Gibson. 2004. Role models in career development: New directions for theory and research. *Journal of Vocational Behavior* 65, 1 (2004), 134 – 156. [https://doi.org/10.1016/S0001-8791\(03\)00051-4](https://doi.org/10.1016/S0001-8791(03)00051-4)
- [24] Mary L Gray and Siddharth Suri. 2019. *Ghost Work: How to Stop Silicon Valley from Building a New Global Underclass*. Eamon Dolan Books.
- [25] Benjamin V Hanrahan, Jutta K Willamowski, Saiganesh Swaminathan, and David B Martin. 2015. TurkBench: Rendering the market for Turkers. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*. 1613–1616.
- [26] Kotaro Hara, Abigail Adams, Kristy Milland, Saiph Savage, Chris Callison-Burch, and Jeffrey P. Bigham. 2018. A Data-Driven Analysis of Workers' Earnings on Amazon Mechanical Turk. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI '18)*. Association for Computing Machinery, New York, NY, USA, Article Paper 449, 14 pages. <https://doi.org/10.1145/3173574.3174023>
- [27] Monica C. Higgins. 2001. Changing careers: the effects of social context. *Journal of Organizational Behavior* 22, 6 (2001), 595–618. <https://doi.org/10.1002/job.104>
- [28] Andreas Hirschi. 2018. The fourth industrial revolution: Issues and implications for career research and practice. *The Career Development Quarterly* 66, 3 (2018), 192–204.
- [29] Paul Hitlin. 2016. Research in the Crowdsourcing Age, a Case Study. Pew Research Center.
- [30] Lilly Irani. 2013. The Cultural Work of Microwork. *New Media & Society* (2013). <https://doi.org/10.1177/1461444813511926>

- [31] Lilly C. Irani and M. Six Silberman. 2013. Turkopticon: Interrupting Worker Invisibility in Amazon Mechanical Turk. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '13)*. Association for Computing Machinery, New York, NY, USA, 611–620. <https://doi.org/10.1145/2470654.2470742>
- [32] Lilly C. Irani and M. Six Silberman. 2016. Stories We Tell About Labor: Turkopticon and the Trouble with “Design”. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems (CHI '16)*. Association for Computing Machinery, New York, NY, USA, 4573–4586. <https://doi.org/10.1145/2858036.2858592>
- [33] Ronald Jacobs and Christopher Washington. 2003. Employee development and organizational performance: a review of literature and directions for future research. *Human Resource Development International* 6, 3 (2003), 343–354.
- [34] Baik-Kyoo Joo and Insuk Lee. 2017. Workplace happiness: work engagement, career satisfaction, and subjective well-being. In *Evidence-based HRM: A Global Forum for Empirical Scholarship*. Emerald Publishing Limited.
- [35] Toni Kaplan, Susumu Saito, Kotaro Hara, and Jeffrey P. Bigham. 2018. Striving to Earn More: A Survey of Work Strategies and Tool Use Among Crowd Workers. In *Proceedings of the Sixth AAAI Conference on Human Computation and Crowdsourcing, HCOMP 2018, Zürich, Switzerland, July 5-8, 2018*, Yiling Chen and Gabriella Kazai (Eds.). AAAI Press, 70–78. <https://aaai.org/ocs/index.php/HCOMP/HCOMP18/paper/view/17920>
- [36] Anna Kasunic, Chun-Wei Chiang, Geoff Kaufman, and Saiph Savage. 2019. Crowd Work on a CV? Understanding How AMT Fits into Turkers’ Career Goals and Professional Profiles. *arXiv preprint arXiv:1902.05361* (2019).
- [37] N. Kaufmann, Thimo Schulze, and Daniel Veit. 2011. More than fun and money. Worker Motivation in Crowdsourcing—A Study on Mechanical Turk. *Proceedings of the Seventeenth Americas Conference on Information Systems*.
- [38] Aniket Kittur, Jeffrey V. Nickerson, Michael Bernstein, Elizabeth Gerber, Aaron Shaw, John Zimmerman, Matt Lease, and John Horton. 2013. The Future of Crowd Work. In *Proceedings of the 2013 Conference on Computer Supported Cooperative Work (CSCW '13)*. Association for Computing Machinery, New York, NY, USA, 1301–1318. <https://doi.org/10.1145/2441776.2441923>
- [39] Kathy E. Kram and Lynn A. Isabella. 1985. Mentoring Alternatives: The Role of Peer Relationships in Career Development. *The Academy of Management Journal* 28, 1 (1985), 110–132. <http://www.jstor.org/stable/256064>
- [40] Markus Krause, Doris Schiöberg, and Jan David Smeddinck. 2018. Mooqita: Empowering Hidden Talents with a Novel Work-Learn Model. In *Extended Abstracts of the 2018 CHI Conference on Human Factors in Computing Systems (CHI EA '18)*. Association for Computing Machinery, New York, NY, USA, 1–10. <https://doi.org/10.1145/3170427.3174351>
- [41] A. Kulkarni, P. Gutheim, P. Narula, D. Rolnitzky, T. Parikh, and B. Hartmann. 2012. MobileWorks: Designing for Quality in a Managed Crowdsourcing Architecture. *IEEE Internet Computing* 16, 5 (2012), 28–35.
- [42] David T. Lee, Emily S. Hamedian, Greg Wolff, and Amy Liu. 2019. Causeway: Scaling Situated Learning with Micro-Role Hierarchies. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI '19)*. Association for Computing Machinery, New York, NY, USA, 1–12. <https://doi.org/10.1145/3290605.3300304>
- [43] Robert W Lent and Steven D Brown. 2013. Social cognitive model of career self-management: Toward a unifying view of adaptive career behavior across the life span. *Journal of counseling psychology* 60, 4 (2013), 557.
- [44] Robert W Lent, Steven D Brown, and Gail Hackett. 2002. Social cognitive career theory. *Career choice and development* 4 (2002), 255–311.
- [45] Linfeng Li, Tawanna R Dillahunt, and Tanya Rosenblat. 2019. Does Driving as a Form of “Gig Work” Mitigate Low-Skilled Job Seekers’ Negative Long-Term Unemployment Effects? *Proceedings of the ACM on Human-Computer Interaction* 3, CSCW (2019), 1–16.
- [46] Anoush Margaryan. 2016. Understanding crowdworkers’ learning practices. (2016).
- [47] Anoush Margaryan. 2019. Comparing crowdworkers’ and conventional knowledge workers’ self-regulated learning strategies in the workplace. *Human Computation: A Transdisciplinary Journal* 6, 1 (2019), 83–97.
- [48] Anoush Margaryan. 2019. Workplace learning in crowdwork. *Journal of Workplace Learning* (2019).
- [49] David Martin, Benjamin V. Hanrahan, Jacki O’Neill, and Neha Gupta. 2014. Being a Turker. In *Proceedings of the 17th ACM Conference on Computer Supported Cooperative Work & Social Computing (CSCW '14)*. Association for Computing Machinery, New York, NY, USA, 224–235. <https://doi.org/10.1145/2531602.2531663>
- [50] Kimberly S McDonald and Linda M Hite. 2005. Reviving the relevance of career development in human resource development. *Human Resource Development Review* 4, 4 (2005), 418–439.
- [51] Sean Mcginley, John O’Neill, Sarah Damaske, and Anna Mattila. 2014. A grounded theory approach to developing a career change model in hospitality. *International Journal of Hospitality Management* 38 (04 2014), 89–98. <https://doi.org/10.1016/j.ijhm.2014.01.003>
- [52] Brian McInnis, Dan Cosley, Chaebong Nam, and Gilly Leshed. 2016. Taking a HIT: Designing around Rejection, Mistrust, Risk, and Workers’ Experiences in Amazon Mechanical Turk. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems (CHI '16)*. Association for Computing Machinery, New York, NY, USA, 2271–2282. <https://doi.org/10.1145/2858036.2858539>
- [53] M.M Nauta, D.L Epperson, and J. H Kahn. 1998. A multiple-groups analysis of predictors of higher level career aspirations among women in mathematics, science, and engineering majors. *Journal of counseling psychology* (1998).

- [54] SJ Noronha and VVS Sarma. 1991. Knowledge-based approaches for scheduling problems: A survey. *IEEE Transactions on Knowledge and Data Engineering* 3, 2 (1991), 160–171.
- [55] Gianpiero Petriglieri, Susan J Ashford, and Amy Wrzesniewski. 2019. Agony and ecstasy in the gig economy: Cultivating holding environments for precarious and personalized work identities. *Administrative Science Quarterly* 64, 1 (2019), 124–170.
- [56] Julie L. Quimby and Angela M. De Santis. 2006. The Influence of Role Models on Women's Career Choices. *The Career Development Quarterly* 54, 4 (2006), 297–306. <https://doi.org/10.1002/j.2161-0045.2006.tb00195.x> arXiv:<https://onlinelibrary.wiley.com/doi/pdf/10.1002/j.2161-0045.2006.tb00195.x>
- [57] Lee Rainie and Janna Anderson. 2017. The Future of Jobs and Jobs Training. Pew Research Center.
- [58] Daniela Retelny, Michael S. Bernstein, and Melissa A. Valentine. 2017. No Workflow Can Ever Be Enough: How Crowdsourcing Workflows Constrain Complex Work. *Proc. ACM Hum.-Comput. Interact.* 1, CSCW, Article Article 89 (Dec. 2017), 23 pages. <https://doi.org/10.1145/3134724>
- [59] Daniela Retelny, Sébastien Robaszkiewicz, Alexandra To, Walter S. Lasecki, Jay Patel, Negar Rahmati, Tulsee Doshi, Melissa Valentine, and Michael S. Bernstein. 2014. Expert Crowdsourcing with Flash Teams. In *Proceedings of the 27th Annual ACM Symposium on User Interface Software and Technology (UIST '14)*. Association for Computing Machinery, New York, NY, USA, 75–85. <https://doi.org/10.1145/2642918.2647409>
- [60] Tim Roughgarden. 2010. Algorithmic game theory. *Commun. ACM* 53, 7 (2010), 78–86.
- [61] Susumu Saito, Chun-Wei Chiang, Saiph Savage, Teppei Nakano, Tetsunori Kobayashi, and Jeffrey P. Bigham. 2019. TurkScanner: Predicting the Hourly Wage of Microtasks. In *The World Wide Web Conference (WWW '19)*. Association for Computing Machinery, New York, NY, USA, 3187–3193. <https://doi.org/10.1145/3308558.3313716>
- [62] Niloufar Salehi and Michael S. Bernstein. 2018. Hive: Collective Design Through Network Rotation. *Proc. ACM Hum.-Comput. Interact.* 2, CSCW, Article 151 (Nov. 2018), 26 pages. <https://doi.org/10.1145/3274420>
- [63] Niloufar Salehi, Lilly C. Irani, Michael S. Bernstein, Ali Alkhatib, Eva Oge, Kristy Milland, and Clickhappier. 2015. We Are Dynamo: Overcoming Stalling and Friction in Collective Action for Crowd Workers. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems (CHI '15)*. Association for Computing Machinery, New York, NY, USA, 1621–1630. <https://doi.org/10.1145/2702123.2702508>
- [64] Niloufar Salehi, Andrew McCabe, Melissa Valentine, and Michael Bernstein. 2017. Huddler: Convening Stable and Familiar Crowd Teams Despite Unpredictable Availability. In *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing (CSCW '17)*. Association for Computing Machinery, New York, NY, USA, 1700–1713. <https://doi.org/10.1145/2998181.2998300>
- [65] Saiph Savage, Chun Wei Chiang, Susumu Saito, Carlos Toxtli, and Jeffrey Bigham. 2020. Becoming the Super Turker: Increasing Wages via a Strategy from High Earning Workers. In *Proceedings of The Web Conference 2020 (WWW '20)*. Association for Computing Machinery, New York, NY, USA, 1241–1252. <https://doi.org/10.1145/3366423.3380200>
- [66] Mark Savickas. [n.d.]. *Career counseling*. Vol. 74. "American Psychological Association.
- [67] Mark L Savickas. 1997. Career adaptability: An integrative construct for life-span, life-space theory. *The career development quarterly* 45, 3 (1997), 247–259.
- [68] Robert F. Scherer, James D. Brodzinski, and Frank A. Wiebe. 1991. Assessing Perception of Career Role-Model Performance: The Self-Employed Parent. *Perceptual and Motor Skills* 72, 2 (1991), 555–560. <https://doi.org/10.2466/pms.1991.72.2.555>
- [69] David Schwartz. 2018. Embedded in the crowd: Creative freelancers, crowdsourced work, and occupational community. *Work and Occupations* 45, 3 (2018), 247–282.
- [70] M. Six Silberman, Lilly Irani, and Joel Ross. 2010. Ethics and Tactics of Professional Crowdwork. *XRDS* 17, 2 (Dec. 2010), 39–43. <https://doi.org/10.1145/1869086.1869100>
- [71] M. S. Silberman, B. Tomlinson, R. LaPlante, J. Ross, L. Irani, and A. Zaldivar. 2018. Responsible Research with Crowds: Pay Crowdworkers at Least Minimum Wage. *Commun. ACM* 61, 3 (Feb. 2018), 39–41. <https://doi.org/10.1145/3180492>
- [72] Will Sutherland, Mohammad Hossein Jarrahi, Michael Dunn, and Sarah Beth Nelson. 2020. Work Precarity and Gig Literacies in Online Freelancing. *Work, Employment and Society* 34, 3 (2020), 457–475.
- [73] Ryo Suzuki, Niloufar Salehi, Michelle S. Lam, Juan C. Marroquin, and Michael S. Bernstein. 2016. Atelier: Repurposing Expert Crowdsourcing Tasks as Micro-Internships. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems (CHI '16)*. Association for Computing Machinery, New York, NY, USA, 2645–2656. <https://doi.org/10.1145/2858036.2858121>
- [74] Brian J Taber and Maureen Blankemeyer. 2015. Future work self and career adaptability in the prediction of proactive career behaviors. *Journal of Vocational Behavior* 86 (2015), 20–27.
- [75] Carlos Toxtli, Angela Richmond-Fuller, and Saiph Savage. 2020. Reputation Agent: Prompting Fair Reviews in Gig Markets. In *Proceedings of The Web Conference 2020 (WWW '20)*. Association for Computing Machinery, New York, NY, USA, 1228–1240. <https://doi.org/10.1145/3366423.3380199>

- [76] Melissa A. Valentine, Daniela Retelny, Alexandra To, Negar Rahmati, Tulsee Doshi, and Michael S. Bernstein. 2017. Flash Organizations: Crowdsourcing Complex Work by Structuring Crowds As Organizations. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems (CHI '17)*. Association for Computing Machinery, New York, NY, USA, 3523–3537. <https://doi.org/10.1145/3025453.3025811>
- [77] Mark E Whiting, Grant Hugh, and Michael S Bernstein. 2019. Fair Work: Crowd Work Minimum Wage with One Line of Code. In *Proceedings of the AAAI Conference on Human Computation and Crowdsourcing*, Vol. 7. 197–206.
- [78] Alex C. Williams, Gloria Mark, Kristy Milland, Edward Lank, and Edith Law. 2019. The Perpetual Work Life of Crowdworkers: How Tooling Practices Increase Fragmentation in Crowdwork. *Proc. ACM Hum.-Comput. Interact.* 3, CSCW, Article Article 24 (Nov. 2019), 28 pages. <https://doi.org/10.1145/3359126>
- [79] Cheryl A. Wright and Scott D. Wright. 1987. The Role of Mentors in the Career Development of Young Professionals. *Family Relations* 36, 2 (1987), 204–208. <http://www.jstor.org/stable/583955>
- [80] Sharon Zhou, Melissa Valentine, and Michael S. Bernstein. 2018. In Search of the Dream Team: Temporally Constrained Multi-Armed Bandits for Identifying Effective Team Structures. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI '18)*. Association for Computing Machinery, New York, NY, USA, 1–13. <https://doi.org/10.1145/3173574.3173682>
- [81] Amin Zulkarnain. 2013. The mediating effect of quality of work life on the relationship between career development and psychological well-being. *International Journal of Research Studies in Psychology* 2, 3 (2013).
- [82] Kathryn Zyskowski, Meredith Ringel Morris, Jeffrey P. Bigham, Mary L. Gray, and Shaun K. Kane. 2015. Accessible Crowdwork? Understanding the Value in and Challenge of Microtask Employment for People with Disabilities. In *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing (CSCW '15)*. Association for Computing Machinery, New York, NY, USA, 1682–1693. <https://doi.org/10.1145/2675133.2675158>

Received June 2020; revised October 2020; accepted December 2020