# Designing for Disadvantaged Job Seekers: Insights from Early Investigations

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## ABSTRACT

The Internet plays a pervasive role in job search and employment, especially for professionals and for those who are highly qualified. While job seekers from all occupational groups and employment status rely on aspects of the Internet for employment, past research suggests that disadvantaged job seekers are being 'left behind' and will continue to be left behind as the Internet takes on a more eminent role in the employment process. To mitigate this outcome, we extended prior literature and took a user-centered design approach to design and implement a web-based employment application that provides job seekers with resume feedback from local volunteers. We piloted our application to understand: 1) the context and circumstances of our application's shortcomings and 2) UX principles that address these shortcomings. We extend employment research that aims to alleviate the negative effects of technological advancement on disadvantaged job seekers.

## Author Keywords

ICTs; Employment; Design; Disadvantaged groups

## ACM Classification Keywords

H.5.m. Information interfaces and presentation: Misc.

## INTRODUCTION

The Internet plays a pervasive role in job search and employment [13]. Information and Communication Technologies (ICTs) provide access to professional networks (e.g., LinkedIn), educational support for finding, preparing and keeping up to date with employment training (e.g., Massive Open Online Courses (MOOCS) [10]), and have led to paid tasks situated in the real world (e.g., TaskRabbit, Uber, and Lyft). However, many of these ICTs (e.g., Uber, MOOCs, LinkedIn) only provide employment support for those who are currently employed [8, 15] and educated [8, 13], and/or who are from high socioeconomic-status (SES) areas [24]. Past research suggests that disadvantaged job seekers (e.g., unemployed job seekers
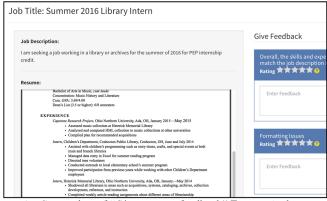
**Figure 1 –** Screenshot of "Give resume feedback" Feature (volunteer evaluates each resume section and can provide open comments)

who are low income and live in low-SES areas) are being 'left behind' and will continue to be left behind as the Internet takes on a more eminent role in the employment process [13]. To mitigate this outcome, we extend: 1) prior work, which outlines the employment needs of active job seekers, particularly living in low-SES areas [7]; 2) employment research, which seeks to fill the need gaps among underserved job seekers [13]; 3) research expressing the importance of social networks in the employment process [12, 13]; and 4) our prior user-centered design (UCD) investigation [7] to understand the needs of active job seekers. We build upon these results by implementing, designing, and piloting an employment application among a diverse set of jobseekers to understand:

1. What are the limitations of our pilot and under what contextual factors do these limitations exist?
2. What user experience (UX) design principles best support these limitations?

## RELATED WORK

For many companies, moving the employment process online is a low-cost alternative to traditional strategies such as recruiting [1]. While companies seeking higher-skilled employees use sites such as LinkedIn to find talent [2], companies seeking lower-skilled employees are also moving their employment and recruiting process online, with government services following suit [4, 20]. These efforts lead to fewer opportunities to encounter recruiters face-to-face and build the social networks that are often beneficial to finding employment [12, 13]. In fact, HCI and other [7, 8, 11, 21, 5] researchers note that disadvantaged individuals often need access to vertical or "linking ties"

that connect groups and individuals to those in authority [27].

As a starting point, we conceptualized an application to connect unemployed individuals to employed individuals (i.e., connect the disadvantaged to the advantaged [8]), and extend prior research [7, 14]. Authors in [7] conducted a participatory-inspired design session with active job seekers from low-SES areas of Detroit to understand if sharing economy applications were suitable for sharing and employment among these communities. Researchers asked job seekers, "*If you could talk to the developers of Airbnb, NeighborGoods, Lyft, and TaskRabbit, what would you tell them to design/build/create for you based on your current employment situation,*" and encouraged them to consider their current employment situations. Our solutions derive from these results, which suggested that job search was not the key issue--understanding how to "land" a job was key. Participants desired feedback (i.e., interview, resume) throughout the job search process. Since resumes are often needed to land an interview, we designed and implemented an application to provide resume feedback to job seekers (see Figure 1). This article includes the results of our initial pilot, discussion of the application's limitations, the contextual difficulties that arose in the deployment, and design principles to address these issues.

## METHODS OVERVIEW AND FINDINGS

Following a UCD process, we conducted a series of investigations with stakeholders (e.g., volunteers, HR professional and trainers) who worked with disadvantaged populations (e.g., unemployed job seekers who are low income, live in low-SES areas, and/or who identified as ex-felons), and with job seekers who were disadvantaged in similar ways. Our investigation consisted of initial insights from an employment intake process at a local career center in Southeastern, Michigan. We then conducted surveys, contextual inquiries [26] and interviews with disadvantaged job seekers, and an expert interview with an HR specialist who had experience working with disadvantaged job seekers. Finally, we made observations during our recruitment process and application deployment. We made several iterations over our concept based on results of these initial investigations.

After obtaining feedback from multiple stakeholders, we implemented a web-based application to provide jobseekers with resume feedback from local volunteers. The application was designed for two user types: job seekers and volunteers. The applications' main features include *upload resume* (job seekers); *give feedback* (volunteers); *get feedback* (job seekers); and *rank feedback received* (job seekers). When a user registers, he or she elects to be a job seeker or volunteer. Secondary features included information on the "Job Preparation" and "Networking" pages, which were included based on observations from an employment-intake process. We built our application prototype in Python using the Python Flask framework. We used the Twitter Bootstrap Framework for its responsiveness, as users could be accessing the site from desktops, tablets, and/or mobile phones. We deployed our pilot among a diverse group of key stakeholders.

**Surveys, contextual inquiries and job seeker interviews**
We surveyed job seekers about their current employment status, the resources and tools they used in the employment process, and barriers to employment. We conducted contextual inquiries to obtain information about how job seekers used the resources provided on our site, what type of information was missing, and what job seekers found beneficial. We also interviewed job seekers to capture preliminary feedback on less developed features.

This study took place at a local employment center serving a majority of low-SES patrons. We learned from observing an employment intake process that the service center supports economic development for the state. Specifically, the center provides information to community members interested in searching for a new job, going back to school for retraining, or exploring career options. We returned to conduct surveys, contextual inquiries, and job seeker interviews with active job seekers.

We presented the participants with an early version of our prototype for preliminary feedback. Participants walked through the application's features, which included a "Job Preparation" page consisting of interview advice, "Top Jobs" for people without a college degree; "Hot Jobs" (e.g., the 25 best jobs of the year), and general resume and interview tips. Two other pages provided networking-advice and resume feedback. Participants described their interaction and their thought process while using the application. The participants explained which features and resources they found useful or not, identified shortcomings of the website, and suggested enhancements.

*Results*
Six job-seeking participants volunteered for our study. Our surveys revealed that five participants were unemployed had been seeking jobs for as few as four days to as long as four years. The sixth participant was employed and worked at a local substance-abuse treatment facility. Participants used the following three resources for career development and job seeking: connections to employment opportunities through friends and family (N=4); the job center where we recruited participants (N=3); and employment-related ICTs such as Snagajob, Indeed, and Mytalent.org (N=3). Employment challenges included reliable access to transportation (N=3), and job training and/or funding (N=3). Though most employers required online application submissions, one of the participants expressed a need for interpersonal connections.

All participants stated during the contextual inquiries that the "Job Preparation" page was beneficial and were most attracted to the following articles: interview preparation and tips (N=6), resume tips (N=3), and top jobs for people

without a degree (N=3). The least beneficial article was an article about "Hot Jobs" (N=4); this article provided information that was irrelevant for employment preparation. One of our participants, Terry, asked that we provide a list of employers who hired former felons. Janet, another participant, proposed that we include information about conducting yourself in a business setting. All participants agreed that resume, cover letter and/or interview feedback was one feature they would put to use; however, the resume upload feature was not fully functioning at the time. Lauren was intrigued by the option of having her resume reviewed by knowledgeable professionals and career counselors. Given that the "Networking" page was the least developed section of the application, participants suggested networking opportunities that they perceived were necessary to find jobs.

In the interviewing session, participants suggested that we add opportunities for them to meet people offline. For example, all participants recommended posting information about local career fairs and similar events to connect with local businesses and professionals. Anna suggested that we provide contact information for local employers and career professionals so that users can reach out to them and develop connections. Jason and Lauren suggested that we add information about developing networking skills.

Based on this feedback, we added opportunities to network offline by providing a list of Meetup.com events; information about "Felony Friendly" companies across the U.S.; and information about how to prepare for—and how to conduct yourself—in an interview. We modified the "Job Preparation" page, so that the least valuable information, "Hot Jobs," appeared after the links to specific job-preparation sites. We then developed the "Resume Review" feature so that job seekers could upload their resumes.

### Expert Interview

To understand how to best support job seekers when providing resume feedback, we conducted a 30-minute semi-structured interview with Joan, a human resources specialist, who worked with disadvantaged populations seeking employment. To inform the design of the "Resume Review" feature, we probed for aspects of the resume that best supported employment. Finally, we asked Joan to preview an early version of the application for feedback from a volunteer's perspective.

*Results*
Overall, Joan thought the concept of connecting job seekers with volunteers to provide resume feedback was a great one; however, she suggested that we regularly notify volunteers that resumes are available for review, as she would not frequently log into this site. She also asked if we could advertise job openings on the site for local companies. Joan informed us that underselling was the most common problem found in resumes and that articulating past experience was key for job seekers; she recommended that the experiences listed on the resume match the job description. We incorporated Joan's feedback and added a question to our resume evaluation form for volunteers to rank the extent to which job seekers' experiences matched the stated job description. We also required job seekers to provide their desired job title and description when uploading their resumes. We updated our application with results from initial observations, contextual inquiries, and expert interviews. We then piloted our application.

### Recruiting and Deployment of Pilot

Unfortunately, the career center would not allow us to distribute recruitment flyers inside of the employment but allowed us to do so outside of the center. We spent approximately one hour recruiting and gave flyers to 20 job seekers. A local librarian allowed us to recruit in the computer lab, which consisted of 20 Windows-based systems that were in use 60-75% at any given time. We spent 4.5 hours across two days recruiting at the library. Finally, we sent out an email to over 300 Master's students inviting them to participate as volunteers and job seekers and posted LinkedIn and Facebook ads. Joan registered as a volunteer and there were no participation incentives.

*Results*
Across the time span of four months, 32 individuals registered on our site (17 job seekers and 15 volunteers). Our logs show that only two library patrons registered as job seekers. Of these, only one uploaded his resume. Fourteen students signed up as job seekers and the remaining fifteen volunteers included past alumni, our HR specialist, and other volunteers who learned about the project through Facebook and LinkedIn posts, and/or from friends. Five of the 15 volunteers reviewed 10 resumes. Of those job seekers who uploaded their resumes, four have yet to receive feedback. Since one of the key study aims was to understand who was being 'left behind', we discuss key barriers identified in the deployment.

While many library patrons took our flyers, most of them commented that they did not have resumes on hand. In fact, many individuals did not have immediate access to their resumes—some had physical copies of their resumes at home. Similarly, we found that individuals saved their resumes on the public computers and eventually lost them due to system upgrades. Others stored their resumes on USB flash drives but these devices had been lost or stolen.

As mentioned earlier, only two library patrons registered as job seekers. However, both of these patrons did so with our assistance. Patrons searched for their email addresses, could not remember their passwords, and one did not have access

| | Past research | Contextual Inquiry | Expert Interview | Recruiting |
|---|---|---|---|---|
| More support for prior felons | X | X | | X |
| Resumes are not available in digital form | | | | X |
| Email addresses and passwords are not readily available | X | | | X |
| Low literacy makes registration difficult | X | | | X |

**Figure 2** – Contextual factors identified during UCD process

to a digital resume. One patron referred to Facebook for her email address, which forwarded mail to a primary email address that she could not remember. In this case, we helped the patron register for a new email address to register for the site. The second patron did not understand how to convert his resume file format to a pdf and one of the researchers walked him through this process.

## DISCUSSION

In the space of Internet-enabled applications, those with limited Internet and technology access are at an obvious disadvantage. We piloted our application among participants who likely fell into this category; however, they found Internet access at local public libraries and at local career centers. We discuss additional shortcomings and consider design principles to address them. We also reflect on our methods, and identify additional shortcomings. For example, we note contextual factors that we did not identify until recruiting.

### Proposed Design Principles

**Compatibility:** Many job seekers did not have digital copies of their resume, though several had physical copies. For compatibility, we propose allowing job seekers to upload a photographed image of their resume, as smartphones with cameras were pervasive among our job seekers [23].

**Practicality:** Some job seekers had a limited understanding of how to keep track of digital files (e.g., via email or in the cloud). There were job seekers who kept digital copies of their resumes on "thumb drives," but these devices were either lost or stolen. For practicality, we propose ways for individuals to submit resumes offline (e.g., accepting resumes via kiosks, or offline networking devices) to account for late technology adopters, and/or mismatches in mental models [17] for how resumes should be submitted.

**Familiarity/Accessibility** [17]: Though we followed a standard interface for user registration, individuals who are not online frequently may forget passwords to accounts such as email. Allowing participants to register with familiar, or frequently accessed mobile accounts, could lead to registration success (e.g., Instagram, Facebook, verify mobile phone with SMS).

**Direct Support**: Finally, some patrons required handholding. Developing easy to use guides and aids for future employment applications could substitute for one-on-one interaction. Designers could also support first-time users by providing a way to call/chat with an expert.

### Insights from Methods in UCD

While our expert interviews, observations made at the career center, and our deployment were valuable, they did not lead to key insights regarding the contextual factors that exist among certain unemployment segments. Figure 2 shows how observations we made during our recruiting, which consisted of a simple flyer describing our pilot application and minimal conversation, identified the same factors that had been discussed in past literature, identified in our contextual interviews, and a factor that had not been

mentioned in any of these sources. This in-situ recruiting process alone could have served as a probe to better inform our design without application development.

We further reflect on shortcomings of our in-take process observations, our contextual inquiries, and expert interviews. For example, while our contextual inquiries took place at a career center computer lab where patrons were already prepared to upload their resumes and were digitally proficient, those outside of the career center where we recruited had not yet reached this point. This key factor was not identified in our in-take process observation.

## LIMITATIONS

While the proposed principles address the shortcomings identified in our deployment, they do not fully address the needs of job seekers who are prior felons. Besides learning that job search was difficult among prior felons and that having a list of felony-friendly employers was beneficial, we did not gain additional context about this group. Exploring their specific employment needs and ways to address these needs through design is an open research area [6] (e.g., how could employment-related applications promote felony-friendly companies to all job seekers and not only ex-felons?). Overall, our sample was small. Though we officially recruited 39 individuals to our study (32 who registered on our site; 7 interviews; this excludes over 40 individuals we tried recruiting). The key insights discussed in this paper primarily derive from the observations of non-participants (in one geographic area).

## CONCLUSION AND FUTURE WORK

To conclude, we conducted an iterative design process to contribute a digital application (unlike CareerBuilder and LinkedIn) which provides free resume feedback to job seekers. This application builds upon design concepts from past work [7] to address the needs of active, disadvantaged job seekers. We contribute the results of an application deployment, which opens up new opportunities for the DIS and CHI communities to address the employment needs of individuals from these underserved communities. We also extend employment research [13] and contextualize the unique conditions and circumstances these individuals face. We contribute four abstract design principles to address these limitations: Compatibility, Practicality, Familiarity/Accessibility, and Direct Support. These principles will enhance the design of and make for more inclusive employment-related ICTs in the future. We hope that designers of employment-based and related ICTs take these design principles into account. Broadly, this work extends HCI and CSCW research that aims to create socially inclusive technologies (e.g., [3, 9, 11, 16, 19, 21]). It is also an effort to understand the broader (socio) economic context of technology [22].

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