Asymmetries in Online Job-Seeking: A Case Study of Muslim-American Women

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As job-seeking and recruiting processes transition into digital spaces, concerns about hiring discrimination in online spaces have developed. Historically, women of color, particularly those with marginalized religious identities, have more challenges in securing employment. We conducted 20 semi-structured interviews with Muslim-American women of color who had used online job platforms in the past two years to understand how they perceive digital hiring tools to be used in practice, how they navigate the US job market, and how hiring discrimination as a phenomenon is thought to relate to their intersecting social identities. Our findings allowed us to identify three major categories of asymmetries (*i.e.,* the relationship between the computing algorithms' structures and their users' experiences): (1) process asymmetries, which is the lack of transparency in data collection processes of job applications; (2) information asymmetries, which refers to the asymmetry in data availability during online job-seeking; and (3) legacy asymmetries, which explains the cultural and historical factors impacting marginalized job applicants. We discuss design implications to support job seekers in identifying and securing positive employment outcomes.

CCS Concepts: • **Human-centered computing** → **Empirical studies in HCI**; • **Social and professional topics** → *Religious orientation*; *Women*; • **Information systems** → *Web applications.*

Additional Key Words and Phrases: algorithmic fairness, online job seeking, labor, discrimination, privacy

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1 INTRODUCTION

Muslim-Americans have been historically stigmatized in the US, particularly within post-9/11 America. Previous literature has examined how this discrimination manifests in a variety of dimensions, including within the workplace and hiring context [109, 110]. Muslim women of color face additional challenges as job-seeking applicants with multiple marginalized identities [53]. Though prior workplace discrimination research has primarily focused on instances of offline discrimination [129], new questions arise as the job-seeking and hiring processes transition to online platforms. For individuals with marginalized identity traits, navigating the online job-seeking process forces applicants to contend with new embodiments of bias and prejudice.

Personal data scraped from applicant social media profiles are routinely used in making hiring decisions today [4, 27, 41]. Access to this information might allow employers to effectively screen for 'red flags', such as evidence of illegal or illicit behavior, but such data use may facilitate unlawful discrimination [92]. For example, experimental studies document lowered positive hiring outcomes for applicants that disclose marginalized identity traits on social media, including those that disclosed their religious affiliation with Islam [5]. AI generated candidate recommendations have also become a popular hiring tool utilized by employers, in which hiring algorithms effectively rank, categorize, and prioritize applicants for job listings [59]. While these algorithms effectively improve efficiency in hiring decision turnarounds, recommender engines can easily be influenced by the prejudices of their decision-makers to selectively prioritize certain candidates at the expense of others [8].

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Prior work in HCI and information studies have investigated the potential harms of algorithmic recommender systems in a workplace and hiring context [5, 77, 97] and the pitfalls of social media screening as a recruiting tool [27]. In this study, we examine the behaviors, attitudes, and perceptions held by Muslim-American women interacting with these online systems to better understand how marginalized users navigate the job-seeking process, and how we can improve these online spaces to be more sensitive to their needs. We interviewed 20 Muslim-American women who had recently been on the U.S. job market to capture the role of technology in aiding or hindering their pursuit of stable employment.

For our core contribution, we identify three major categories of asymmetries, or recurring case scenarios where applicants lack access or information critical for securing positive hiring outcomes via online systems. The first asymmetry, which we define as *process asymmetries*, manifests as lack of transparency to applicants with regards to what information is collected about participants, when this information is collected, and by whom. This lack of transparency extends to not knowing how heavily algorithmic input and social media data factor into hiring decisions, and general anxiety about what data, logic, or techniques are employed by hiring algorithms. Second, we identify *information asymmetries* regarding publicly accessible data about the companies and jobs themselves. Minority individuals with specific workplace concerns, such as the desire for a diverse work environment, found this information being withheld from them by the companies in question, and found limited success in engaging with laborious workaround strategies. Thirdly, we recognize *legacy asymmetries* that explains cultural and historical factors that constrains both traditional and online job-seeking prospects for our participants. Lastly, we outline design recommendations for both company websites and popular online job platforms that work to mitigate the knowledge gap created by these asymmetries, and ultimately support and improve conditions for Muslim-American women in pursuit of employment.

2 RELATED WORK

In this section, we present scholarship around nuances of the Muslim identity in the United States using an intersectional lens, examine the impact of hiring discrimination on minorities, and focus on the role of social media and algorithms in employment decision making.

2.1 The Muslim Identity in the United States

Muslims have been historically marginalized in the US, creating for a unique space in which Muslim-Americans must exist [51, 70]. Newspapers and other traditional mass-media outlets, which largely shape public sentiment, subject Muslims to depictions that include "continuous reference to images of extremism, terrorism, and irrationality that portray Muslims as "backward," static, and premodern" [110]. While media outlets harness this specific language to draw a divide between the American 'us' and the alien 'them', they inadvertently perpetuate a conflict of interest for Muslim-Americans who must reconcile these two seemingly disparate parts of their identity [30]. In the following, we first explain identity negotiation strategies taken by Muslim-Americans and follow with an intersectional perspective of Muslim-American women's experiences.

2.1.1 Identity negotiation. The hypervisibility of Muslims today, due in part to the shift in American society following 9/11, requires many Muslim-Americans to "reframe" and rebrand their identities to be more palatable to mainstream, Western values and norms [64, 109]. This post 9/11 period has given rise to growing "Muslim self-consciousness," [109] leading to two primary approaches to identity negotiation at the individual and group level.

First, individuals strategically choose which aspects of themselves are publicly visible to distance themselves from the 'Muslim' labels often negatively associated with terrorism [42], including online behaviors such as religious self-disclosure. A study conducted on Myspace found that "a negative perception of [a stigmatized] religion appeared to mute religious self-disclosures among individuals who would be otherwise expected to disclose abundantly" [20]. The second approach, often employed by organizational and community leaders, involves fostering a 'positive and moderate' Muslim-American identity perceived to be more compatible with mainstream American ideals [96]. This new identity construction is documented in existing studies with examples of self-policing behaviors among Muslim-Americans ranging from individuals wearing "friendlier" pink hijabs in the place of more stigmatized black hijabs, to making life-altering decisions by relocating families out of Muslim-majority neighborhoods [30, 109].

Within workplaces and job interviews, social identities that are often not immediately discernible, such as religious affiliation, must be strategically negotiated by applicants and employees [48]. Though much of existing workplace diversity scholarship has historically kept the focus on 'visible' social identities, including race and gender, newer schools of thought suggest that the stigmatization of "invisible social identities" in the workplace can lead to detrimental consequences for individuals as well [35]. Muslim women, in particular, are privy to additional damaging perceptions that further weaken their employment prospects. Biases manifest primarily through the stereotype of the "oppressed Muslim woman" [105] where their perceived lack of autonomy can bleed into their evaluation as potential employees. Next, we use an intersectional lens to understand the complexity of the Muslim-American women's experiences.

2.1.2 Intersectionality of Religion, Gender, and Race. We use intersectionality as an analytical lens to understand the identities and compound injustices faced by Muslim-American women. In the United States, Muslim women often have multiple marginalized identities, including being women, people of color, and a religious or cultural minority in the United States [88]. Examining the experiences of people who live intersecting, marginalized lives, like Muslim-American women, provides a way to examine their experiences, specifically of oppression, that could not be seen, or seen as vividly, by studying people who may have only a single or few characteristics of oppression [36, 40]. In what follows, we explain the foundations of intersectional feminism and current relevant scholarly conversations within HCI and CSCW regarding using intersectionality as a lens to examine people's experiences with computing technologies.

Intersectional feminism addresses how oppression may be experienced multidimensionally from different perspectives. While mainstream feminism focuses on gender-based oppression (*i.e.*, sexism)—typically based on the experiences of white and middle-class women, excluding experiences of women of color [40], intersectional feminism focuses on inequalities triggered by two or more factors such as gender, sexuality, race, class, ability, and others, and how they act concurrently within larger systems of oppression [40, 115]—the "discriminatory institutions, structures, norms that are embedded in the fabric of our society" [1]. Though Crenshaw coined the term intersectionality, intersectionality as a concept has earlier roots [98]. Crenshaw's work examined how black women experienced labor discrimination differently than either black men or white women; her work demonstrates that ongoing discrimination could only be seen when looking at the compounding marginalizing experiences of black women, rather than looking solely at experiences of women or people of color [39]. We adapt Crenshaw's framework and in what follows we examine the intersecting forms of work, employment, and social injustices faced by Muslim-American women, who are very frequently women of color [33] or identifying as non-White[2].

Women of color have historically suffered from biased treatment compared to white women and male counterparts in employment [12, 39], leadership [66], social services [88, 101], and healthcare [104, 122], and are more likely to face "discrimination, prejudice, and lack of psychosocial and instrumental support"in the workplace [21, 107]. Further, women of color receive lower wages than white women and men of color, are often faced with microaggressions and job segregation that restricts their chances of upward mobility [58], and have limited seats in leadership roles due to covert discrimination and stereotype threat [112]—"socially premised psychological threat that arises when one is in a situation or doing something for which a negative stereotype about one's group applies"[3]—compared to men of color and white women [37, 107]. According to the 2017 NSF Division of Science Resources Statistics, underrepresented minority women are less likely than men to earn degrees or be employed in STEM fields and tenured positions [29]. Moreover, being of a religious minority and often of color [33], Muslim-American women are faced with gendered Islamophobia [15, 33, 45, 65, 74]. In addition to Muslim women facing the familiar sexism by Muslims and non-Muslims alike, they are commonly viewed by mainstream feminists as victims of their patriarchal religion and, thus, often neglected [76, 108]. We dismiss the notion of portraying Muslim women as a homogeneous group; rather, by adopting an intersectional lens, we focus

[1]The Simon Fraser Public Interest Research Group (SFPIRG). 2017. Systems of Oppression. (August 2017). Retrieved July 12, 2020 from https://sfpirg.ca/infohub/systems-of-oppression

[2]The majority of Muslim-American adults are 41% categorized as white, a category that includes Arabs and Persians/Iranians [32]. However, Arab and Iranian-Americans reported being often be perceived as non-White [80, 89]. Whereas, "U.S.-born Muslims are more likely than immigrant Muslims to be black (32% vs. 11%). In fact, fully half of Muslims whose families have been in the U.S. for at least three generations are black (51%)" [32].

[3]Anon. Stereotype Threat. Retrieved July 20, 2020 from https://diversity.nih.gov/sociocultural-factors/stereotype-threat

on structural and social obstacles, expand the interwoven gender and racial dimensions of bias to include religion, and view the unique experiences of Muslim-American women while acknowledging their agency and beliefs.

Muslim-American experiences that are understudied in computing and related fields [87, 115], and within social computing research, explicitly adapting intersectionality is a growing area. Discussions focus on intersectionality as a lens on research itself and empirically understand people's experiences with technology. Scholars provide a solid grounding on how to conduct intersectional research [63, 73, 98, 107, 124]. In 2017, Schlesinger et al. conducted a meta-review of identity representations in HCI on 140 publications where they found previous work tended to focus on one identity facet at a time [107]. Schlesinger et al. proposed ways to tackle intersectionality in HCI, including being consistent in reporting context and demographics for all users, not only non-Westerns, being explicit about the author's identity, and not shying away from providing as much identity-complexity possible [107]. Rankin and Thomas criticized the recent body of intersectional HCI for its shortage in properly addressing history and contributions of women of color, and provided concrete steps to not repeat previous mistakes, such as citing black women for their work [98]. HCI Scholars collectively cautioned researchers from reducing intersectionality to a buzzword, and rather to properly employ intersectionality as an analytic framework to highlight complex injustices and promote inclusivity [67, 73, 124]. Likewise, a body of HCI work produced empirical understandings of the user's experience using intersectionality. The themes explored include accessibility [55], socioeconomic structure [13, 75], and representation in computing and game design [67, 115–117]. Further, by considering HCI work with compounding marginalized identities as intersectional, we find scholars dissecting compounding identities in data mining models [93], and HCI4D research that looks at the intersections of socioeconomic class and gender [62, 81, 114], broader work examining legal status and gender [26], and occupational and gender marginalization [113]. In our work, we strive to apply intersectional HCI foundations in participants' representation and data analysis and contribute to the intersectional HCI literature by examining Muslim-American women's unique experience, inspecting algorithmic injustice at the intersection of religion, race, and gender.

2.2 Privacy in Islamic Culture

Privacy, broadly, is a well-researched topic within HCI literature [14, 24, 25, 56, 71, 85]. While privacy has become increasingly understood as a function of context, limited work exists that meaningfully recognizes it as a nuanced product of varying cultural considerations [3, 16]. Related research is the work of scholars Abokhodair and Vieweg, who examined and theorized about social media and privacy practices from an Islamic perspective within the context of the GCC Region [4] [1–3, 119]. In their work, Abokhodair and Vieweg highlight the three Islamic privacy domains as (1) home privacy, (2) privacy for gender-exclusive spaces, and (3) individual privacy. They emphasize the non-individualistic perception of privacy in Islamic cultures, where safeguarding these boundaries of privacy is both a social and personal responsibility that extends beyond one's self, and reflects upon the honor and reputation of one's nuclear and extended family [1, 119]. In a following paper, Abokhodair et al. elaborate on social media practices within the context of the Arab gulf, which overlaps with Islamic communities in the West in varying degrees, classifying the notion of self-presentation into the autonomous and collective self [2]. The collective self encompasses individuals as part of a larger entity that may include their families, tribe, and society. Culturally, the concept of maintaining family honor is unevenly imposed on women more than men [95, 119], thus, reflecting stricter privacy practices on public social media platforms by Muslim women [2, 3, 119]. While many of these considerations are a product of culture as much as they are of religion, and women who identify with Islam in the US hail from a variety of cultural backgrounds, recognizing the overlap between modesty, gender, and privacy in Islam is helpful for understanding the values of our participants and provides a nuanced frame of reference for their privacy practices and attitudes.

2.3 Understanding Hiring Discrimination

Taste-based discrimination, the economic model for labor market discrimination, occurs when the personal prejudices of an employer negatively impact the employability of minority workers [91]. Members of stigmatized groups, especially those with

[4]GCC stands for the Gulf Cooperation Council, a regional political organization comprising the countries: Saudi Arabia, Kuwait, Bahrain, Qatar, the United Arab Emirates, and Oman, sharing common religious, cultural, and economic views.

multiple minority statuses, often face additional hurdles in both securing stable job opportunities and retaining them [50]. A meta-analysis of hiring discrimination experiments over the last 50 years found that "minority applicants. . . [on average had]...to write 1.5 times as many applications as their majority peers" [129] to secure employment. Additionally, even a perception of discrimination in the workplace can have detrimental effects on both an employee's physical and psychological health [90].

Promoting diversity in the workplace, however, can have many tangible benefits, including improved labor productivity and decreased employee absenteeism [106]. A diverse set of perspectives within the employee base can also lead to new approaches in problem solving, help drive company innovation, and create competitive advantages in the global marketplace [106]. In order to reduce instances of hiring discrimination, the regulation of poor hiring practices picked up speed before ultimately reaching critical mass in 1964 with the creation of the Equal Employment Opportunity Commission (EEOC) [83]. The EEOC remains responsible for enforcing legislation that forbids discriminatory hiring practices against federally-protected classes of individuals, including discrimination on the basis of age, gender, race, religious affiliation, and sexual orientation among others.

Processes and practices involved in the hiring process have changed dramatically since the time of the EEOC's inception. While hiring and recruiting have traditionally relied on offline vehicles, such as classifieds in newspapers, online spaces have become increasingly popular for job-seeking individuals [103]. In 1994, Monster.com became one of the very first online job boards, boasting a public database of applicant resumes by 1996. Today, roughly over three quarters of all active job seekers utilize online resources, such as social-professional networking sites and online job boards, in their search for gainful employment [31]. While changes to laws and statues have attempted to address instances of offline hiring discrimination, research suggests that there has been minimal changes in levels of racialized hiring discrimination since 1989 [94]. Coupled with the new, often times ambiguous, role of technology, many job seekers continue to face personal identity-related concerns when looking for employment. Within our study, we look to address these concerns, and how they affect multiple minority status individuals.

2.4 Social Media and Employer Decision-Making

With the transition into digital spaces for job-seeking processes, social media data, information scraped about applicants from their personal profiles on popular social media platforms, has become increasingly important in influencing major hiring decisions [23, 118]. In 2009, nearly half of all hiring managers reported investigating job candidate profiles on social media [27], and a Microsoft Research study in 2010 revealed that "79% of the U.S. employers [...] used the Internet to screen applicants" [99].

Knowledge gathering about job candidates on social media is often seen as a beneficial step by employers looking to make informed hiring decisions [47]. Criteria for screening, and consequent rejections, commonly includes photos or posts on applicant profiles indicating heavy alcohol or illegal drug use, while Facebook, Twitter and LinkedIn are cited as the most commonly researched platforms for this practice [27]. Social media screening is "widely accepted [by hiring and recruiting managers] because of its close relation to the act of posting a job advertisement on the Internet", and is also generally believed to be effective in preventing reputational harm to hiring firms [41]. However, incorporating this practice into official hiring protocols poses several, significant risks.

Brown and Vaughn outline three major potential dangers when utilizing social media data for hiring decisions., including "perceptions of invasion of applicant privacy," a lack of "well-documented support for the validity" of personal information broadcasted on the web, and the threat of misuse when information irrelevant to job performance may be used to screen candidates from a position [27]. Publicly accessible information collected online can be used at the employer's discretion, which creates for a lack of transparency that can ultimately "severely curtail the enforcement of anti-discrimination statues in the recruitment phase", and can allow for the proliferation of the practice of unlawful discrimination [68, 92, 118].

Discriminatory attitudes towards Muslim-American job candidates, in particular, have already been revealed in previous experimental studies [18]. Research looking specifically at social media screening practices suggests that online screening negatively affects callback rates of Muslim job applicants in the US. An experiment in hiring discrimination within the US South found that across different religious groups, Muslim candidates with identical online job applications "received 38 percent fewer e-mails and 54 percent fewer phone calls" [121], while another HCI study showcased results in which the applicant who had

disclosed their Muslim-American identity on social media received 16% fewer callbacks than the identical Christian candidate in specific geographic regions. This information ultimately leads to an understanding that "online disclosure of certain personal traits can influence the hiring decisions of U.S. firms" [5].

2.5 Algorithms in the Hiring Process

This transition into digital spaces for job-seeking has also been facilitated in part by a dependence on algorithmic assistance. Algorithms can be defined as sets of operations that allow computers to perform automated tasks. They are frequently used to describe the application of machine-learning methods, a subset of AI practices, to common digital services. Implementations of this method include personalized recommendations on e-commerce websites, facial recognition software on photo sharing applications, and a variety of new hiring tools [7, 100]. While algorithmic hiring tools can improve efficiency in the recruiting process for employers [59], these tools and systems can also exacerbate and perpetuate instances of discrimination.

Private-interest companies, the primary developers of these algorithms, operate on principles motivated by profit. The prioritization of profit and efficiency consequently come at a cost to consumer well-being by "reproduc[ing] existing patterns of discrimination" [17], further exacerbated by willful neglect on the part of these companies in addressing the resulting harmful social consequences [44, 82]. Rather, blackboxing tactics employed by these companies encourage opacity in the public's perception of algorithms, and frame them as inherently neutral technological artifacts [28]. For most individuals, this lack of transparency prevents them from understanding what logic, techniques, and information are used to arrive at algorithmic outputs, and instead can breed "algorithmic anxiety" [43] in their interactions with these cryptic systems.

Workplaces are increasingly using algorithms for recruitment and hiring purposes. With the rising popularity of social-professional networking sites and online job boards, such as LinkedIn and Indeed, many recruiting managers have begun to adopt AI-driven tools into their hiring practices. Most common are applicant recommender systems, though novel technologies, such as HireVue's unique AI interviewing tool are continuing to gain traction [34]. Applicant recommender systems work in fundamentally similar ways to personalized shopping recommendations, by ranking, prioritizing and ultimately suggesting individual applicants as potential matches for searching employers. A familiarity with this type of functionality across other systems further strengthens the persistent view of algorithms as objective entities, and facilitates the widespread adoption of automated recommendations on online job boards as a trusted decision making tool.

An overdependence on this practice, however, raises some concerns [57]. The most obvious issue is that "by design, [the recommendations] encourage an employer to consider some workers but not others" [59], and particularly disadvantages underrepresented job candidates [126]. Personalized recommender systems generally operate, broadly speaking, as information filters. The machine and deep learning algorithms embedded into these tools work by learning users' preferences, according to their historical behaviors on a given platform, and then predict their future proclivity for given options based on this knowledge [125]. Though this can be a helpful tool in creating applicant filters based on tangible candidate qualifications, such as technical skills or education, it fails to accurately capture many of the intangible personal characteristics that contribute to positive labor outcomes [77]. Ultimately, "although most companies do not intentionally engage in discriminatory hiring practices, their reliance on automated systems, algorithms, and existing networks systematically benefits some at the expense of others, often without employers even recognizing the biases of such mechanisms" [102].

3 METHODS

Prior Islamic HCI work has engaged predominantly with Muslim women in Muslim majority countries [1–3, 61, 114, 119]. We highlight how the unique position of Muslims in the US, who have been subjected to targeted surveillance and public mistrust [42], may play a role in how Muslim women approach online job-seeking. As an exploratory investigation, we mainly wanted more insight into the ways Muslim-American women seek out jobs online, their attitudes around hiring discrimination, and in what ways they think digital hiring tools are used. The research team adopted a qualitative approach focused on gathering rich details and descriptive personal accounts. To do this, we led one-on-one interviews with participants over the course of three months.

Our interviews focused on their conceptualizations of algorithms, practices on various online job and social media platforms, and perceptions of prejudice in the hiring process. We recruited participants via paper flyer canvassing in relevant environments (e.g., mosques, Arab supermarkets), social media adverts in niche groups (e.g., Muslim Women in Tech, a closed group on Facebook), and snowball sampling.

We sought participants with Islam as their primary religious or cultural affiliation, had lived in the US for over a decade, were of adult age, and had searched for employment on an online platform within the past two years. Our selection criteria was broad to ensure the researchers could capture a wide set of potential concerns, preferences and perceptions.. At the time of their scheduled interview, participants received a brief survey focused on demographic data and administered via Qualtrics. On average, interviews lasted nearly an hour (approximately 55 minutes), but ranged from 31 to 70 minutes. Interviews were conducted in person, on the phone, or via Zoom or Skype. All interviews were conducted in English.

From January 2020 till March 2020, the first author interviewed 20 individuals who had been on the job market within the past two calendar years. Sixteen of the 20 participants were currently employed, while four were still actively seeking employment. The employed participants occupations ranged from finance, management, and marketing (6); healthcare (4); non-profit, political, or governmental organizations (4); insurance (1); and engineering (1) industries. Participants ranged from 21 to 43 years of age, with a mean age of 27.3. Sixteen participants identified as South Asian (Pakistani or Indian), three identified as Middle Eastern or North African, while one participant identified themselves as African-American.

All interviews were audio-recorded, with the exception of one participant who withheld consent for personal reasons. These audio recordings were partially transcribed using Otter AI, a speech to text web application service. Automated transcriptions were then manually edited by the first author to match the original audio files. The authors met on a regular basis in order to discuss the interview and survey data.

This research team balanced both insider and outsider perspectives in their analysis approach. Researchers on this team drew from their statuses as both peripheral members, those who "observe and interact closely enough with [study activities] to establish an insider's identity without participating in those activities constituting the core of group membership" [6] and complete member researchers, those who are a part of the community being studied, to inform their data interpretations. The first author, who administered all interviews, identifies as a cis-gender female who has grown up within the culture and religion of Islam. Their role as a complete member researcher may have made it more likely for participants to disclose and share certain information with them than if they held more out-group characteristics [6]. The first phase of analysis consisted of the first author engaging in a theoretical memoing process, following the conventions of The SAGE Encyclopedia of Qualitative Research Methods [54]. They then conducted an inductive analysis of the interview transcripts utilizing open coding, "the interpretative process by which data is broken down analytically" [38], to determine broad categories. This process took place on MAXQDA, a qualitative data analysis software, as well as on Otter AI's native document system.

Initial sets of codes focused on identifying the most frequently mentioned online job platforms, specific challenges and experiences associated with job-seeking, user workaround strategies, and commonly held sentiments through broad categories. Once rudimentary themes were pinpointed, ensuing rounds of iterative coding involved establishing larger patterns of variation across the sample in order to build conceptual categories. While continuing to analyze the data, the research team realized participants were describing several key asymmetries between themselves as job seekers and the online job platforms. Later cycles of analysis worked to refine these classes of asymmetries while leaning heavily on a constructivist Grounded theory 'inspired' approach. This lens, coupled with the first and second author's own grounding in Islam as Muslim women, was adopted to accurately convey the attitudes and perceptions of participants by constructing interpretations of their articulated experiences. Data analysis concluded once the authors felt that they had achieved theoretical saturation, the point at which "no new properties, dimensions, or relationships" [38] continued to emerge.

4 FINDINGS

Online job-seeking processes rely heavily on their algorithmic underpinnings, which often disproportionately hurts marginal Internet users [82]. Hiring discrimination is an ongoing problem in the U.S. job market [94], and participants described how such inequalities may now occur in new algorithmically driven ways online. Most individuals found anti-discrimination statutes effective in curbing overt prejudice, but less effective for addressing the more latent online forms of discrimination, such as job rejections loosely framed on the basis of poor 'cultural fit' [60], an often ambiguous way to suggest that an individual's social identities (including their religion) are misaligned with the values of the larger workplace.

In this case study, we identified three specific asymmetries that our participants faced, including *process, information, and legacy* asymmetries. These identified asymmetries refer to the differences in power, resources, experiences, consequences, and benefits that marginalized communities face when dealing with algorithmic computing systems. Such asymmetries reference the relationship between the structures behind the computing algorithms (*e.g.,* online hiring platforms; hiring organizations) and their users and the experiential differences amongst populations with different marginalized statuses. By *process asymmetry*, we refer to the lack of transparency for applicants regarding key job application data collection processes, focusing on what, when, and by whom information is collected about job applicants. This lack of transparency extends to not knowing how heavily algorithmic input and social media data factors into hiring decisions, and general anxiety about what data, logic, or techniques are employed by hiring algorithms. Second, by *information asymmetry*, we refer to the unequal expectations between companies and job applicants about what data was available and disclosed during the online job-seeking process. Information asymmetries are also a product of data opacity. Specifically in the case of our participants, Muslim women with distinct workplace concerns, such as the desire for prayer rooms on-site, found this information being withheld from them by the companies in question, and found limited success in engaging with laborious workaround strategies. Lastly, *legacy asymmetries* explain the cultural and historical factors (e.g., limited social resources as a product of being an immigrant) that unevenly and adversely impact marginalized job applicants in both traditional and online job-seeking. Together, these three larger categories of asymmetries, process, information, and legacy, hinder job-seeking experiences and outcomes.

4.1 Process Asymmetries

Process asymmetries manifest when organizations, either the hiring firms or online job application platforms, do not adequately disclose their job application data collection processes to job applicants, including what, when, and by whom information is collected about these online job applicants. We identified two key process asymmetries related to computational hiring algorithms. First, hiring decisions are blackboxed, meaning that most job applicants have little understanding of how decisions are made and who or even what makes the decisions (*i.e.*, Was this decision made by an algorithm? When and how were real humans involved in the application decision making process, if at all?), which we call, "*blackboxing hiring decisions*". Second, applicants lack an understanding of what information factors into hiring decisions, including how the information was obtained, which we call, "*blackboxing social media data collection*". For this finding, we delve into what details explicitly disclosed on job applications or collected from public digital spaces (*e.g.*, public social media posts) are then used by either algorithms or recruiting staff to make employability determinations.

4.1.1 Blackboxing Algorithmic Hiring Decisions. How employers make hiring decisions is often hidden from job applicants [86], including how hiring and recruiting processes transition into algorithmically driven systems. Given that many participants did not know how these algorithmic hiring decisions work, from the employers' perspective, our participants developed several folk theories (*i.e,* causal, explanatory theories shared collectively [52] to make sense of and assuage the anxieties that arise when interacting with algorithms. People create folk theories when they lack insider knowledge about how a system or process works. While these working theories may not accurately match how these systems work in actuality (*i.e.*, from the perspective of the organization), they tend to be useful and guide user's interactions with systems and processes [127]. Specifically, within our data, participants created working folk theories about how these algorithms, and the larger job application processes, worked and impacted how they applied for jobs. Within our participant pool, 18 of the 20 participants stated that they were familiar with the

idea that hiring algorithms are extensively used on these platforms, and most reported that they believed their job applications had been previously processed by one.

While familiar with hiring algorithms, participants often struggled with defining what algorithms do or are, with a few participants choosing to skip answering the question entirely. The most common conceptualization was reflective of the narrative pushed by private companies, with a majority of participants defining algorithms as inherently neutral technological artifacts [28].

"That's really tough, I'm not sure how to define an algorithm. I imagine it as a maze, that's just how I visualize it inside of my head. It connects different dots that'll lead you to an eventual result." - (P08)

While unfamiliar with the explicit inner workings of these online hiring-related algorithms, participants created ideas about how these systems might work, how such systems preferenced certain people, and what criteria was used to marginalize others. The folk theories developed by many of the individuals in our sample were deeply influenced by their own social identities, and fixated on the ways different legacy factors (e.g., being a first-gen college student) and demographic details (e.g., being Muslim women of color) could disadvantage them. When asked to describe how they understood automated candidate recommendations to be generated, most participants stated that these hiring algorithms prioritized candidate recommendations for employers based on semantic similarities between an applicant's resume and a job description's wording. Secondary factors included the prestige of an applicant's degree granting institution or previous firm, as well as total years of relevant work experience. Participants discussed fears that algorithms filtered out individuals from less well connected backgrounds. Specifically, those in circumstances that would inhibit their access to expensive resources such as private career or academic counselors, which were understood to be critical in improving the odds of job applications being processed favorably by algorithms.

This lack of transparency also fed into anxiety about interacting with these algorithmic systems, particularly due to the disclosure of demographic information on their applications. Participants worried that employers would use an applicant's demographic information to filter out individuals on the basis of religion, ethnicity, or gender; identity characteristics in which all 20 participants held minority status. Four participants alluded to concerns around the existence of 'algorithmic bias' in these systems as well. When probed to define the term, most described the phenomena as when algorithms were negatively manipulated or biased against certain populations, which they described as only possible by the work of the direct developers.

"It's been proven time and time again that algorithms are racist themselves and very biased. People think because the computer doesn't have any human thoughts or emotions, that means it's devoid and only doing logical reasoning. But the people that are making it, are making it a certain way in their mind to consistently define the way hiring algorithms work. [...] I think it [lies in] the way you're coding it. If you're coding it to [...] only look at certain schools, [or] if you're only looking at certain areas, you're cutting out the vast majority of other candidates that might be even better." - (P11)

In our conversations, participants reported adopting several 'generic' techniques to help promote their applications. These were typically steps or actions that were presented to them as general best practices by their schools, colleagues, or online resources. Some steps mentioned included the reformatting of information on individual applications to mirror the wording of job descriptions. In accordance with their ideas of semantic similarity matching, most of these changes involved adding in terms the participants identified as employer "keywords" to their application materials (*e.g.* If the job description used the word "digital marketing" often, applicants would emphasise this term in their own resume). Multiple individuals reported engaging in this tailoring practice, which was thought to help their job applications "more quickly rise above the rest [of the candidates by] highlighting more of the experience that's relevant to that role" without having to "hide" anything else that could be perceived as detrimental. Participants also chose to downplay gaps in employment by extending the dates of their last held position ("I said I worked at a place longer than I actually did"), or even hiding the true nature of their work by embellishing role titles and job responsibilities ("changing the title of your job [to] something that just sounds more higher than what you actually were doing").

However, in response to the threat of anticipated algorithmic bias, many participants developed more specific strategies to improve their employability. To assuage concerns about being filtered or screened out based on their identities as Muslim women of color, participants struggled with deciding what information should be hidden on their job applications. Many participants expressed worries that their ethnicity, or 'foreignness', could expose them to xenophobia, creating for hesitations about answering many of the optional demographic questions that commonly appeared on online job applications. Choosing to abstain from answering questions about race was most common, with participants categorizing the disclosure of their personal traits on applications as a potential "risk" to their hiring outcomes. Leaving these questions blank posed another concern for some, who worried having unanswered questions would leave too much room for speculation and affect the way their application would be processed. Specifically, many participants worried that their ambiguous names and backgrounds ("You look at my name and then you look at my resume and you're like oh, like, 'Where is she from?'"), without the context of ethnicity, would work to exclude them from certain jobs. As a result of these concerns, some participants even expressed the desire to actively select different options for race on applications, a behavior which stemmed heavily from a shared perception of "certain races [being] given a better image than others".

Additionally, participants conveyed high levels of uneasiness with regards to disclosing any information reflective of their religious identity. As we will discuss in later sections, this uneasiness primarily shaped behaviors on social media, but also extended to information shared on online job applications. Actions to work around this concern again included omitting answers to demographic questions about religious identity, in addition to removing or entirely reworking information about any previous work experiences affiliated with Islam or Muslim organizations.

"I do know that it is a pretty common sentiment to want to minimize your involvement in religious organizations specifically for religious minorities [...] My resume, if you take one look at it, you know that I'm a Muslim because I have a lot of experience with Muslim based organizations, like the Islamic Society of America. And I did MSA [Muslim Student Assocation] for a few years [...] so if you look on my resume, then you know that I'm a Muslim. And my dad was constantly asking me to remove Muslim Student Association from my resume, and just say it was a student organization." - (P16)

Within our sample, the most popular virtual job boards included LinkedIn, Indeed, Glassdoor, Idealist, and Handshake, a private school-affiliated platform. All participants agreed that AI generated processes should never be exclusively used for hiring decisions as such technologies were perceived to lack the sophistication needed to effectively capture elements of human personality and workplace fit. Though most of our participants were unable to define the concept of an algorithm, they all felt subject to their influence in the hiring process. The explicit lack of transparency surrounding hiring algorithms gave rise to a few core speculations and explanatory theories, leading to new adaptive strategies that allowed individuals to circumvent potential biases. While the workaround strategies created in response to the identified process asymmetries gave our participants some peace of mind, many still held onto concerns about their identity traits, especially as explicitly Muslim women, when interacting with these algorithmic systems.

4.1.2 Blackboxing Social Media Data Collection. Another key practice that deepens process asymmetries includes how employers often obfuscate what and how they collect additional information online from potential job applicants. In our dataset, participants were specifically concerned that their public social media data was accessed, collected, and used by hiring managers to evaluate applicants, a practice referred to as social media screening. Participants were concerned that social media screening allowed for the proliferation of unlawful discrimination, specifically with reference to harming Muslim job applicants [5]. All participants were familiar with social media screening and most suspected that the information they shared on their personal social media accounts could influence employer decision-making. While most participants had educated guesses about when an applicant's social media information might be reviewed by hiring staff, few were able to definitively state what information or content would be considered most influential. Additionally, participants were unclear on if their private social media information, content that they only shared with certain audiences under specific privacy settings, might be accessible. Several participants speculated that

employers and companies utilized 'special software' that scraped private information off of social media, causing heightened levels of anxiety. Participants had questions about which members of the hiring committee were in charge of actively reviewing their profiles, as different individuals were thought to hold different sets of implicit biases.

In examining this practice of social media screening, participants reasoned that all of their public social media profiles were equally likely to be investigated. The social media platforms most frequently used by participants were also the ones reported to be most commonly reviewed by employers [27], and included Facebook, Twitter, Snapchat, and Instagram. The categories of social media data most likely to be used by employers for filtering out candidates, as identified by participants, included what they considered to be 'red flags', which they described as "inappropriate content" that paints individuals out to be 'unprofessional', such as evidence of binge-drinking or illicit drug use. Participants suggested that employers might be looking for information indicative of personality on an applicant's social media profile, which could be reflected in content that displays an applicant's interests and hobbies, revealing whether or not an individual would 'mesh' with the larger company culture. Personal views or opinions shared on social media were thought to be a high-impact factor, especially when voicing unpopular opinions on controversial topics, and was characterized as any content that solidified an individual's alignment with an idea. Finally, participants suggested that social media content that revealed an applicant's identity traits was also a consideration for discerning employers, and was explained as personal information disclosed in the 'bio' or 'About me' sections of an online profile, and as photo or video content of applicants that reveal their visible characteristics, including gender, race, or religious affiliation. All of the participants reported learning how to protect their information on social media previously, either from high school and university resources or peers, and were warned to clean up] their social media presence before job-seeking.

However, aside from these general 'housekeeping' instructions, many participants explained having to consider additional sets of criteria in order to effectively curate their social media presences. Oftentimes, these further concerns were directly tied to their personal characteristics as ethnic Muslim women, and required strategies that extended far beyond the recommendations communicated to applicants at large. Many participants reported adopting these strategies to maintain some anonymity in hopes of being judged solely based on merit, and reducing the opportunity for hiring staff to act on their implicit biases. Additionally, Muslim women, particularly those adhering to more orthodox interpretations of Islam, had to strike a balance between adhering to tenets of their faith and presenting themselves as attractive job applicants (e.g., violating norms of Islamic modesty by publicly sharing professional head shots on social media like LinkedIn)[10]. One common privacy protecting behavior across our sample included adjusting privacy settings by varying degrees on all active social media profiles. Participants described this set of actions as either constructing custom restrictions so that only certain audiences and individuals could see certain kinds of content, but also making their entire profile inaccessible to public visitors through features like 'profile locking' on Facebook. A frequently recurring example of this included utilizing Instagram's 'private account' feature, in which posts are invisible to individuals who have not been personally approved by the owner of the account. When pressed to explain the rationale behind these actions, participants expressed a sense of risk-aversion.

"... Once [employers] get your application and are interested in you, it's not just about what's on your resume and what's in your application. They will look you up. [They want to see] how else you're out and projecting in the world, whether that's through something very personal, like Instagram, your Facebook or whether that's LinkedIn. You will find a lot that people [...] keep [their social media] very private, and not have any public access to anything. [...] It might not even be that you're putting anything bad out there, but again going back to hiring discrimination and the one person looking at you, you don't know what their experiences are, you don't know what their perception is based on what they've been exposed to. You can't take that risk, sometimes it's better to just leave it unknown." -(P06)

Participants described the process of 'cleaning' their social media content. Typically, in this retroactive self-censorship process, individuals manually filtered through their active profiles to temporarily hide, delete, or archive any concerning content. While all participants knew to remove information that could potentially be categorized as red flags, they also took pains to hide any

information that could reveal their minority identity traits, as well as content that explicitly stated their political views, or opinions that could be perceived as critical of the US government.

"I really would hope that they're just looking at general professionalism, trying to get an idea of who you are and your personality, but realistically, I know that for myself when I was on the job hunt, [...] I went through, especially my Twitter, and anything that was too political, [I thought] 'you know what, if somebody has different beliefs than me and they see that then they might not hire me'. I went ahead and deleted it because I didn't want to take that risk [...] I think people have their own biases and if they see something they don't like personally, they might take that out on you." -(P16)

Changing profile pictures, or removing them entirely, was also a practice that was popular among many applicants. This was especially a concern for participants that were not white-passing, or wore religious identifiers like the hijab. When electing to change photos on social media profiles, many changed them to more 'professional' images of themselves (*e.g.*, photo of themselves in business casual attire instead of cultural garb) or photos of objects and individuals other than themselves (*e.g.*, photo of their children or a flower).

"I am definitely aware that recruiters use that [social media] to take a look and decide whether or not they will call a potential candidate. [...] I think there are definitely some challenges that Muslim women face and some concerns that Muslim women tend to echo across the board. Whether or not, for example, as a professional to have your picture on LinkedIn wearing a hijab, and what the impact that that could potentially have on your possible employment." -(P18)

Along the same vein, many participants chose to change their display names on social media profiles to subvert searchability. To avoid having their full names, as disclosed on job applications, associated with their social media accounts, individuals detailed temporarily changing display names to nicknames, made-up words, or anagrams of their original names.

Finally, the most labor-intensive protective strategy shared by participants involved the creation of entirely separate social media profiles under aliases. These alternative social media accounts, which were then only shared with a select handful of friends and family, were effectively used as a designated space for applicants to share uninhibited content. This allowed their more 'searchable', public-facing social media profiles to remain under lockdown throughout the entirety of the job-seeking process, while still affording individuals with an outlet for personal expression through their secondary accounts.

"I created a 'finsta' [fake Instagram] because there's so much information I want to share with [only] my friends. I just had a lot of funny things or you know, that sense of sense of humor that we sort of have with our close friends, that I couldn't do on my Instagram. And so I was like, 'I need a platform to express my creative side'." -(P15)

Interestingly, though prior research with different populations suggests that most individuals do not have privacy behaviors aligned with their privacy concerns, often due to low digital literacy [72], our participants appeared to be extremely knowledgeable about manipulating privacy settings across popular social media platforms. This may be a product of our participants learning to cope with 'social surveillance' ("[Muslim women in some circles are] frequently watched by members of the community who will report inappropriate behavior to their families" [119]) already in their daily lives. Playing a balancing act between managing expectations of their cultural community while also remaining cognizant of the demands of social media screening (e.g., presenting themselves as modest and reserved vs. professional and accomplished online), led to many participants voicing concerns about the validity of using data about one's personal life to determine one's professional life. While our participant's creative privacy-protecting strategies granted them some certainty under increasingly uncertain conditions, many were still troubled by the overall lack of clarity surrounding popular social media screening practices.

4.2 Information Asymmetries

Information asymmetries refer to the lack of information transparency, for applicants, regarding key cultural and organizational information about specific companies, jobs, and workplaces. Broadly, such information helps job seekers make decisions about which jobs to apply for or which job offers to accept. This information is especially important for minority individuals, including Muslim-American women, who hold specific workplace concerns such as the desire for diverse work colleagues or onsite accommodations for daily religious rituals. Current hiring processes allow employers to access and ask for endless streams of information about potential applicants online, but these job postings and virtual platforms offer little to no information in return to hopeful job seekers. This becomes a heightened issue for many minority applicants, such as our sample of participants, who were less likely to ask clarifying questions about their identity-specific concerns throughout the interview and application process for fear of catalyzing hiring discrimination. By not disclosing key pieces of information, while also closing off pathways for individuals to ask for them, an information asymmetry is formed when the power to make educated decisions is greatly skewed against applicants.

Assessing cultural fit is described to be important to minority job applicants for a myriad of reasons. Structural inequalities and the marginalization of minority characteristics, including religious affiliation, race, and gender, has long since been linked to negative physical and mental health consequences [90]. If employees feel as though their culture, values, and/or religion are not respected or at odds with the company culture, it stands to greatly worsen the quality of life for these individuals. Many of our participants mentioned actively looking for recurring specific pieces of information when applying to jobs to evaluate company compatibility and workplace fit. Our participants, who had identity-specific concerns as Muslim women of color, revealed several key factors in assessing cultural fit. Participants gauged potential for social acceptance in the workplace by looking at the relative diversity of the work environment. Being able to identify minority employees in higher-up roles was reassuring to applicants concerned about upward mobility in the company hierarchy. In their job searches, participants specifically looked to see if women of color were well-represented in the work environment, and if possible, reported looking specifically for Muslim women of color.

"I think being a Muslim woman at law school, or even being a woman of color at law school, is very different [...] And then obviously [it would be] the same job market because in law firms, you rarely see [WOC]... even the places where I was saying, like, 'Oh, they're diverse', it's just [checking to see] if they had at least you know, two people of color there. So I think that that being part of my identity is something that I look for more." -(P11)

Similar to concerns about workplace diversity, participants also had a focus on the relative diversity of the larger surrounding area. Most individuals were only open to relocating to cities or towns that had active, local mosques for practicing Muslims, or other active minority community groups (e.g., Meetup groups for Pakistani-Americans) they could be a part of. If workplace diversity was not easily perceptible, individuals felt that the diversity in the surrounding population could still grant them access to a more balanced social life. Attitudes of local citizens, too, were considered to be a product of the relative diversity in the area. Native citizens of more predominantly white locales were perceived to be holding onto more prejudiced beliefs, including Islamophobia.

"I want to know how many people are not white, to be completely honest, because I don't want to live in a 91% white state where there's no people like me around. I think they should prioritize doing that [...] I would love to see diversity metrics so you would know [about where you'll be living]." -(P01)

Beyond diversity, many participants shared concerns about how accommodating potential workplaces may be for their individual religious beliefs and practices. A major tenet of Islam prescribes abstaining from alcohol, and some participants expressed that the potential for social acceptance in the workplace could be highly influenced by the significance of alcohol in the company's

culture. Others recounted anecdotes from previous work experiences in which social events tended to be centered around activities that involved alcohol consumption. While a number of the participants chose to attend these events and abstain from drinking themselves, other participants revealed a desire for a company culture that actively prioritized offering different kinds of employee bonding events entirely.

"sometimes I feel a sense of subtle racism just because I'm someone who doesn't drink. Just even when I go out for a work event, it's always like a happy hour, or if I'm traveling with my work group, it's always revolving around drinking. Those times [I'm made to feel] kind of different, I kind of feel out of my element." -(P03)

Even if electing to not drink during those socialization hours, many of our participants expressed concerns about being spotted or seen in bar settings by other members of their community, as such environments could be seen as dishonorable places for Muslim women to frequent. Other participants outlined personal ethical conflicts that prevented them from pursuing specific job opportunities. For many, employment opportunities at companies that supported causes directly in conflict with their Islamic values, such as those with Zionist agendas, were immediately categorized as nonviable options.

"I mean a lot of my concerns are mostly ethically based, which are obviously guided by my faith. That's where my moral and ethical values come from. So [I have to think], 'Okay, am I gonna have to work on a project that deals with something I potentially don't like or I don't support?'...like what it involves something like working for ICE [U.S. Immigration and Customs Enforcement] or specific foreign governments. [...] Those are the important things that were in my mind." -(P15)

The final unique consideration reiterated by several participants when job-seeking involved prioritizing employers that were willing to accommodate the daily Islamic prayer timetable. This included searching for workplaces with onsite meditation, lactation, or worship spaces, and less strictly regimented employee work schedules. These individuals also desired positions that allowed them the flexibility to take time off work for major religious celebrations, typically not recognized as federal holidays.

"Having a schedule that rotates around prayers is a little difficult sometimes. [...] Coming from [my last job] in Philly, where there's a giant Arab community, during Ramadan [the Islamic holy month] when you didn't eat it wasn't a big deal. If you took time off of school or work to go for prayers or even for Eid [an Islamic holiday], it wasn't a big deal. Here [in my new job in Georgia] it is a big deal."-(P14)

Information about cultural diversity or religious acceptance at an organization was rarely presented to applicants on individual job postings, or about the companies at large on the popular digital job platforms in which they are showcased. To combat such information asymmetries, many applicants reported engaging in additional tactics to ascertain answers for themselves. These tactics included researching company's diversity statements and policies, examining employee directories to identify individuals of color, and looking through employee reviews posted on portals like Glassdoor to find any mentions of company policies regarding religious accommodations. Lastly, participants joined community-level, private online groups on social media, such as the Muslim Women Professional Network, to discover recommended jobs already vetted for their particular needs, with "point[s] of contact you could reach out to [with any personal] questions."

Even with all these supplementary strategies in place, insight about a particular company's corporate culture and attitudes about diversity (in the way of religion, gender, and race) was hard to discern. Many participants reported resigning themselves to having critical information simply left unknown, and making life-altering decisions under the conditions of this knowledge gap. Ultimately, such information asymmetries force vulnerable participants to gamble on compromising their personal values in exchange for secure employment.

4.3 Legacy Asymmetries

In this section, we demonstrate how legacy asymmetries impact people's experiences related to online hiring. By legacy asymmetries, we refer to various social, economic, and political phenomena that continue to disproportionately and detrimentally impact certain marginalized social groups [50]. They refer to the various historical inequalities that continue to affect minority populations in the analog and digital world. Specifically, within our context, our participants alluded to several key legacy factors that impacted their experiences, including difficulties in navigating the American education system and job market as first and second generation immigrants, inherited familial financial constraints, and unique cultural factors that work to inhibit opportunities for Muslim women. These inequalities range from minor microaggressions experienced in their daily lives to deep-rooted systemic factors that inhibit personal, familial, and community-wide prosperity [69]. While newer manifestations of hiring discrimination appear within these online platforms, hiring discrimination targeting Muslim women is not a new phenomenon, and can be traced back to longstanding social attitudes. Inherited legacy factors, consequences of these historical inequalities, impact an individual's ability to engage in the online job-seeking process unhindered.

For disenfranchised communities that have been restricted from traditional networking and recruiting opportunities, larger societal framing often positions the Internet as the great equalizer [123]. Buying into this belief means that for our participants, the online job-seeking process was perceived to be paramount as they lacked other concrete means of access to gainful employment. Online spaces afford applicants the mask of anonymity, by obscuring physical appearances and visible identifiers, to shield individuals from hiring prejudice they might otherwise face offline. However, many participants spoke at length about how the more harmful aspects of their offline realities still managed to seep into their digital job searching activity. Participants identified several legacy factors perceived to be extremely influential in determining one's immediate hiring outcomes. Many of these were factors they described feeling personally disadvantaged in, and felt had significantly affected their behaviors while applying to jobs online. The most common sentiment expressed by participants involved the opportunity cost associated with attending less prestigious higher-education institutions. Elite colleges have long since been known to confer special privileges to their matriculants in terms of resources, alumni networks, and job opportunities [128]. The ranking or prestige of an individual's alma mater was perceived to be, by participants, an incredibly important factor in hiring decisions made both by employers and algorithms on online job platforms.

"If you're looking at a top company, the kind of people that they're probably hiring... you're probably only exclusively looking at Ivy League. [...] I think a lot of people of color, and a lot of women of color [don't] have the privilege and financial means to go to an Ivy League education." -(P11)

Participants in our group largely identified as first generation students. Several participants theorized that for applicants without insider connections, particularly those of minority status like themselves, it was imperative to have the brand recognition of a highly ranked institution on your resume to compensate. However, demographic portraits of Muslim-American households reveal that many, on average, have both larger families living under one roof and lower average household incomes, restricting many financial opportunities including the ability to attend expensive, private institutions [33]. Most participants in our sample attended their public in-state institution, schools that offered them generous financial aid, while others had felt pressured to exclusively consider commuter colleges that would eliminate additional housing costs.

Consequences of these inherited familial financial constraints prevented participants from taking advantage of costly counseling resources and career stepping stones. Investing time and energy into financially burdensome job-seeking experiences, were not accessible for many participants, even if they stood to improve one's employability. Examples of these missed opportunities included passing on resume-enhancing unpaid internships in favor of unrelated part-time work that was paid, or not being able to take advantage in expensive career coaching services that taught applicants how to more successfully navigate the job-seeking process, among others [111].

"There are definitely classes that exist that teach you how to apply to big companies like Google and Facebook, the big tech ones. So when you have people kind of paying money to essentially be funneled into these big corporations… they're being taught exactly what to say and exactly what's coming to them. There is like this unfairness that kind of pops up, class privilege comes into play." -(P02)

Participants also reported feeling as though they were at a distinct disadvantage due to their limited professional networks. Connections were seen as an important factor in both offline and online spaces. All participants in our group were either children of immigrants, or immigrants themselves, limiting their networks growing up only to immediate family members. Many participants recounted that their parental figures were employed in working class jobs, and unable to extend any professional contacts to their children. As a result, many participants described having to single-handedly forge each of their individual connections later on in adulthood, though this process too was fraught with obstacles. One such limitation includes the fact that most offline networking and recruiting opportunities are held in bar and lounge settings centered around alcohol consumption. While this is typically considered an intimidating and unfriendly environment for many practicing Muslim-Americans, it especially curbs the opportunities of Muslim-American women who face harsher scrutiny, and risk reputational harm, within their communities [22]. Even beyond informal networking events, some of our hijabi participants reported still feeling a sense of unease when looking for jobs through other face-to-face channels, such as career fairs.

"I'm visibly Muslim, and we had these career fairs where students would be recruited from a lot of different agencies that came [...] I never got any calls from any of those career fairs. I honestly don't know if it's because [...] of my qualification[s] or what I look like, [but I don't know] what was the reason that they never even gave me an interview. " -(P04)

For our participants, resources on the Internet proved to be one of the only accessible methods through which they could tangibly expand their professional networks.

"I don't have a single lawyer in my family and I'm the first person, me and my sister, in my family to attend college. And then for me, I'm the first one to attend law school, or grad school in general. So I really had to rely heavily on the internet and just any other resources that were available to me." -(P11)

The last legacy factor that was perceived to detrimentally impact participant hiring outcomes was best described as conflicting cultural expectations. These cultural expectations, which most greatly affect immigrant children, often limited and shaped the kinds of jobs and career paths individuals were ultimately able to pursue. Literature illustrates how the sacrifices of immigrant parents foster far deeper senses of family obligation in first and second generation minority children than in children of European backgrounds [49]. This was reflected in our participants who expressed an amplified need for job security in order to financially support their immediate and extended families. Religious and cultural constraints can discourage and prevent unmarried Muslim-American women from moving far away from home for their personal career or educational pursuits [84], further capping their pool of options. While this was seen as a hurdle to opportunity in some of our participants, others felt a volitional obligation to stay physically close to their aging parents and younger siblings.

"My parents are immigrants, I'm Pakistani, there's all these things, and it's a unique experience. You get such a different cultural experience because you have to understand so much more about people's vulnerabilities, or people not having what they need, or not getting access to the same institutions. I can imagine if I grew up as a white, American, Christian person, I would have a very different perspective and would have grown up to be a very different person." -(P01)

Job-seekers of minority status enter the online job-seeking process with several constraints as a consequence of these compounded legacy factors. The realities of the offline world, as well as the flaws we identified in the relevant online systems, highlight a need for a shift in design values. In order to best serve this population's needs within the context of job-seeking, we must consider how to integrate sensitivity and inclusivity into our digital spaces.

5 DISCUSSION

While the transition of job-seeking and hiring into online spaces offers many strengths, it also presents new challenges, especially for those belonging to marginalized communities. As employers continue to rely on hiring algorithms and applicants' social media data as candidate screeners, many hiring decisions will result from co-mingled human and AI processes. Providing algorithmic assistance to recruiting staff improves efficiency throughout the hiring process, such as increases in callback rates and more rapidly filled positions [59]. Online, algorithmic-enhanced hiring processes help marginalized job-seekers by bypassing analog barriers. For example, first and second generation immigrants are significantly less likely to have strong professional networks in their relevant industry sectors than multi-generational Americans [46], thus, making online platforms a valuable space for individuals seeking opportunities. However, in our work, we identified several key issues that hinder the experiences of Muslim-American women in these digital spaces. We highlighted several asymmetries showcasing how data unevenly benefits employers' decision-making processes regarding who would be a good fit, without extending that same courtesy to applicants. We draw on previous work exploring algorithmic inequity and participants' online job-seeking experiences to reveal how such platforms and their algorithmic underpinnings may uphold "the unjust subordination of one social group and the privileging of another [...] through automated, data-driven and predictive systems" [79]. In our discussion, we suggest recommendations around data transparency and design intended to facilitate a more equitable and inclusive online job-seeking experience.

5.1 Data Transparency and Employability

Our participants hailed from a variety of industry sectors, ethnicities, and ages, and we use this subset of varied experiences to inform our recommendations. We considered that, despite their heterogeneous backgrounds, many of our participants expressed abiding by similar codes of conduct or value systems that were at least in part fueled by their collective identity as Muslim American women. One of the largest issues our participants expressed was the lack of transparency they faced around what kind of personal data (e.g., concerns about ethnic names, gender, prestige of the institution attended, etc.) was collected about applicants by hiring staff, and how they factored into final hiring decisions. Bloated systems, where thousands of hopeful employees submit to singular job postings, also make it impossible for applicants to receive timely, individual feedback about their applications. In our study, most participants reported it was more common to never be contacted at all after submitting an application than it was to receive a generic rejection email. This lack of communication and certainty about where one stands in the larger application review process was found to be deeply discouraging, with some participants reporting that they withdrew completely from job-seeking in order to regain their confidence as job candidates. When compounded with the opacity around personal data use and collection, this lack of application feedback further alienated individuals, and an overwhelming number of our participants reported perceiving themselves as less valuable applicants as a result.

Applicants kept intentionally in the dark about the ways employers arrive at final hiring outcomes are left to their own devices and forced to construct narratives amongst themselves to explain and understand how those decisions may have been made. The inverse situation, in which applicants simultaneously lack access to sufficient information about potential job opportunities also occasionally forces individuals to compromise their personal needs in order to secure employment (e.g., being employed in an alcohol-centric workplace culture). In order to ultimately positively improve hiring outcomes for minority job seekers, we must make accommodations for their special considerations in the workplace and provide more accessible information about the role of algorithms in recruiting. In the following section we will outline a few design recommendations to improve the job-seeking experience and better support some of the needs of Muslim-American women.

Given the data transparency concerns our participants highlighted (i.e., personal data use and collection, lack of communication, work environment information, and extent of algorithmic use), we identify a few key ways popular job-seeking platforms could be improved. The current design framework on virtual job boards and the career and hiring pages of individual company websites are inadequate in providing Muslim-American women with enough support to make informed decisions about future employers and workplaces. A combination of changes to the choice architecture (e.g., changes to filter options for search results) on virtual job boards supported by the inclusion of data disclosure statements on company websites will work to improve information transparency to applicants on how data is used throughout the hiring process. These changes may also work to clear up confusion with regards to special accommodations certain populations may desire in the workplace when actively applying to jobs.

To account for transparency and anxiety among job seekers who are unable to determine what factors determine their hiring outcomes, companies (e.g., individual firms) could include digestible, easy to access data disclosure statements on their websites to explain their general social media screening practices (e.g., "We typically scrape data from relevant Facebook and Instagram accounts after XYZ stage of the recruiting process if we are interested in an applicant"); and disclose which specific members of the hiring or recruiting staff were entrusted with reviewing their particular social media information (e.g., knowing which individuals collect, review, or handle photographs of applicants is an important consideration for some interpretations of Islamic modesty).

Virtual job boards must also create carefully constructed data disclosure statements that outline data types (e.g., demographics, click trails [the sequence of link selections users make when visiting a site]) and data sources that are typically sampled during the applicant review process by employers. Disclosure statements should then break down the specific uses and manipulations (e.g., analysis) of the aforementioned data, while also elaborating on the logic, techniques, and factors used by predictive hiring tools (e.g, machine learning algorithms) that might come into play. Information with regards to the data storage policies (e.g., where is the data stored, by whom is it handled–so that women with faith-related concerns can identify which specific individuals are entrusted with their materials) of different companies and virtual job boards will also be important information to make transparent. These disclosures could also provide companies with an opportunity to communicate what rights applicants might hold with regards to their data, including their right to review any of the collected data, and the right to consent to or opt out of particular data collection practices.

Opportunities for recourse should exist at both the data gathering and algorithmic processing levels for companies and platforms, so applicants can contest incorrect information collected about them, especially when systems make incorrect assessments based on the gathered applicant data. Alkhatib and Bernstein outline potential avenues for recourse, emphasizing the importance of formal, comprehensible fair appeals processes that allow users to identify when and how systems make mistakes, and concrete avenues to then resolve resulting misjudgements [9].

5.2 Supporting Diversity Through Design

As individuals holding multiple minority statuses, our participants expressed a deep desire to be employed at companies with inclusive and diverse workplace environments. However, information regarding the ethnic, religious, and gender diversity of employees at particular firms are not disclosed in virtual job listings, and are not typically available through other information gathering methods as well. Participants in our sample took several measures to navigate the diversity issue, with many individuals even limiting their job search to certain geographic locales in order to use the relatively high diversity of surrounding towns and cities as a proxy for the diversity of a given workplace. Other participants reported examining employee directories to manually determine the number of minority applicants that worked at specific companies, which still proved to be an occasionally ineffective, and labor-intensive strategy. To mitigate this information gap, we suggest a new potential design choice to make diversity a more unambiguous consideration when job-seeking.

The first way this knowledge gap could be addressed would be through the integration of 'Diversity' as a filter for applicants on online job platforms. Currently, several online job platforms allow applicants to refine their search results for open positions with a variety of filters, ranging from medical benefits to salary range. Adding in an option to allow applicants to also filter job results by the relative diversity of the work environment can work to support the concerns of minority applicants. This could

be accomplished through the development of an easily understood standardized scoring system, inclusive of gender, ethnicity, religious affiliation and other salient identity traits. Examples of existing scoring methods include USA Today's diversity index which yields scores ranging from 0 to 1, which has since been adapted for different uses, such as the ranking of different higher education institutions by student body diversity [78]. This work could then be supported by the release of additional workplace diversity statistics on company websites. This will supplement the diversity filter on larger platforms, intended to act as an initial screening tool, while the more granular information posted on company websites about the specific diversity at certain workplaces will help to provide further insight to individuals with more particular considerations (e.g., working in a female only workplace).

To further support diverse workplaces in place, we discuss design considerations for better accommodating special populations. Within our sample of Muslim-American women, many participants listed amenties they desired from potential work environments that could not easily be determined online. Examples included designated on-site spaces for prayer, and flexibility for time-off from work for religious holidays, that are not federally recognized, among others. These perks could easily be integrated into many online job platforms' existing filtration options by simply being added under the banner filter for 'Employee Benefits'. Many popular platforms, such as Linkedin, allow applicants to narrow search results with the aforementioned filter based on common benefits including maternity leave, commuter aid, or student loan assistance. Simply including options to allow individuals to filter based on religious accommodations could be valuable in effectively supporting the unique needs of minority populations.

5.3 The Limits of Transparency

Much of this discussion has focused primarily on transparency as a means to bridge our identified information and process asymmetries, but ignores factors, such as inherited legacy factors, that contribute to imbalances in the job-seeking journey. Despite the concerted efforts of developers, policy makers, and researchers in creating more equitable systems, the constantly shifting ethical guidelines in AI work make it difficult for individuals in these roles to accurately capture and address the realities of different marginal communities [120]. In order to be perceptive of the unique sensitivities, harms, and preferences of Muslim American women, it is imperative to not only make design changes towards achieving transparency, but to also reimagine and reshape current stakeholder roles. Multi-stakeholder initiatives that involve perspectives of community organizations (e.g., Muslim Women's Professional Network) and their individual members can support meeting new measures of algorithmic fairness, and support final outcomes that embrace otherwise excluded voices.

We also recognize that endeavors towards transparency may not help individuals achieve agency in their algorithmically disadvantaged situations at all, and that the 'autonomy through openness' [11] approach has several limitations. While transparency can be a first tangible step towards bridging informational gaps in sociotechnical systems, and is widely lauded as such in social computing work, steps towards making data collection and use processes transparent ignores how power dynamics, digital literacy gaps, and histories of mistrust (e.g., between the larger Muslim-American community and surveillance technologies) will continue to exist and limit user empowerment.

Access to data alone will not bring about fairness, and though the design solutions we posed may mitigate some challenges, imbalances in the hiring process also stems from unevenness in the ceilings of organizational capacity and human power within HR. As framed in Sultana et. al's paper, we suggest design opportunities that "empower within, not against" [114]. to provide temporary reprieves within unfair systems that require total structural reorganization for the goals of true justice. As job-seeking and hiring processes become irretrievably embedded into digital spaces, we must consider how the transformation of these processes into technological systems can do as much harm as good and must remain critical and reflective of their limits to accurately represent the "cultural, political, [and] societal" [19] considerations of their users.

6 CONCLUSION

We frame our work as exploratory research at the intersection of Islamic HCI and algorithmic fairness. Our findings center on how Muslim-American women, a population holding multiple marginal minority statuses, face obstacles and anxieties during their online job-seeking process. We were particularly interested in how our participants conceptualized and interacted with hiring

algorithms and the threat of social media screening by hiring personnel, but also in how they dealt with the relevant resource constraints (e.g., being first generation college students) that affected their employment outcomes.

In our work, we apply an asymmetries oriented approach, and highlight the three major mechanisms that were thought to give rise to many of our participant's obstacles and anxieties. In our application, we focused on the differences in information, power, and status between job seekers and systems entrusted to hire them. This approach allowed us to identify the most pressing issues, among others within this context, in need of redress to bring about more equitable and valuable hiring outcomes. However, in recognizing asymmetries, we also recognize existing movements towards achieving symmetry (i.e, more fair and accessible pathways to jobs), particularly those employed by our participants on individual and community levels. This in turn helped us avoid building a deficit narrative, which tends to focus solely on the oppressive constructs experienced by a community, rather than on the competencies they exhibit when faced with them. Finally, an asymmetries orientation allowed us to better understand the far-reaching complexities of our problem space, ultimately leading us to propose recommendations as potential intermediary steps rather than presenting them as end-all solutions.

In doing this work, we recognize the limitations of our choice of method and analyses. Though we were interested in investigating the impact of hiring algorithms on the hiring outcomes of our target population, we opted for a qualitative approach working directly with participants rather than examining the efficacy of hiring algorithms. Our focus on the asymmetries experienced by our participants ignores the perspective of hiring staff, private companies, and job seeking individuals of non-minority status who may face significant asymmetries of their own when looking to secure positive employment outcomes. However, through our singular focus, we were able to engage more deeply with the individuals in our sample and understand how they perceived the efficacy of hiring algorithms, and how these perceptions, regardless of their accuracy, still deeply affected online and offline behaviors. We also stress the importance of recognizing the intersectionality of the population of Muslim-American women, and how deeply diverse the lived experiences of this particular community may be. Our focus on the context of job-seeking and hiring constrained the degree to which we were able to focus on the richness of this intersectionality, and how it may shape the lives of our participants beyond their roles as potential employees. While our sample consisted of participants hailing from many different cultures, racial identities, and ages, we acknowledge the need for more even representation across these parameters. Our participant pool was largely comprised of South Asian Muslim women who skewed towards the younger end of our age range, and we hope future work can be more reflective of the experiences of other communities of women who identify as Muslim-American.

As employment decisions, job postings, and job applications continue to be hosted online, we stress the importance of investigating the nuances of the digital job seeking experience. Future research could benefit from the inclusion of the perspectives of Muslim-American men, and non-binary individuals Muslims in building a more comprehensive understanding of this population, but the perspectives of those on the opposite side of the process (e.g., HR and hiring staff) would likely reveal important insights as well. Based on our findings, we were able to develop preliminary design suggestions to support the unique needs of our sample population of Muslim-American women. Though design solutions alone cannot mitigate the deeply entrenched disadvantages faced by different populations in the job-seeking process, we believe following up with community based participatory research to build tangible design interventions can be a natural next step to this work.

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REFERENCES

[1] Norah Abokhodair, Sofiane Abbar, Sarah Vieweg, and Yelena Mejova. 2016. Privacy and Twitter in Qatar: Traditional Values in the Digital World. In *Proceedings of the 8th ACM Conference on Web Science* (Hannover, Germany) *(WebSci '16)*. Association for Computing Machinery, New York, NY, USA, 66–77. https://doi.org/10.1145/2908131.2908146

[2] Norah Abokhodair, Adam Hodges, and Sarah Vieweg. 2017. Photo Sharing in the Arab Gulf: Expressing the Collective and Autonomous Selves *(CSCW '17)*. Association for Computing Machinery, New York, NY, USA, 696–711. https://doi.org/10.1145/2998181.2998338

[3] Norah Abokhodair and Sarah Vieweg. 2016. Privacy & Social Media in the Context of the Arab Gulf. In *Proceedings of the 2016 ACM Conference on Designing Interactive Systems* (Brisbane, QLD, Australia) *(DIS '16)*. Association for Computing Machinery, New York, NY, USA, 672–683. https://doi.org/10.1145/2901790.2901873

[4] Patricia Abril, Avner Levin, and Alissa Del Riego. 2012. Blurred Boundaries: Social Media Privacy and the Twenty-First-Century Employee. *American Business Law Journal* 49, 1 (2012), 63–124.

[5] Alessandro Acquisti and Christina Fong. 2019. An Experiment in Hiring Discrimination via Online Social Networks. *Management Science* 66, 3 (2019), 1005–1507.

[6] Patricia Adler and Peter Adler. 1987. *Membership roles in field research.* Sage Publications.

[7] Gediminas Adomavicius and Alexander Tuzhilin. 2005. Toward the next generation of recommender systems: a survey of the state-of-the-art and possible extensions. *IEEE Transactions on Knowledge and Data Engineering* 17, 6 (2005), 734–749.

[8] Ifeoma Ajunwa, Sorelle Friedler, Carlos Scheidegger, and Suresh Venkatasubramanian. 2016. Hiring by Algorithm: Predicting and Preventing Disparate Impact. In *Proceedings of the Yale Law School Information Society Project conference Unlocking the Black Box: The Promise and Limits of Algorithmic Accountability in the Professions.*

[9] Ali Alkhatib and Michael Bernstein. 2019. Street-level algorithms: A theory at the gaps between policy and decisions. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems.* Association for Computing Machinery, 1–13.

[10] Shaykh Muhammad Salih AlMunajjid. 1998. *Ruling on photographs.* Retrieved "April 2, 2021" from https://islamqa.info/en/answers/365/ruling-on-photographs

[11] Mike Ananny and Kate Crawford. 2018. Seeing without knowing: Limitations of the transparency ideal and its application to algorithmic accountability. *new media society* 20, 3 (2018), 973–989.

[12] Karen Tucker Anderson. 1982. Last hired, first fired: Black women workers during World War II. *The Journal of American History* 69, 1 (1982), 82–97.

[13] Ingrid Arreola, Zan Morris, Matthew Francisco, Kay Connelly, Kelly Caine, and Ginger White. [n.d.]. From checking on to checking in: designing for low socio-economic status older adults. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems.* 1933–1936.

[14] Oshrat Ayalon and Eran Toch. 2013. Retrospective Privacy: Managing Longitudinal Privacy in Online Social Networks. In *Proceedings of the Ninth Symposium on Usable Privacy and Security* (Newcastle, United Kingdom) *(SOUPS '13)*. Association for Computing Machinery, New York, NY, USA, Article 4, 13 pages. https://doi.org/10.1145/2501604.2501608

[15] Sahar F Aziz. 2012. From the oppressed to the terrorist: Muslim-American women in the crosshairs of intersectionality. *Hastings Race & Poverty LJ* 9 (2012), 191.

[16] Louise Barkhuus. 2012. The Mismeasurement of Privacy: Using Contextual Integrity to Reconsider Privacy in HCI. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (Austin, Texas, USA) *(CHI '12)*. Association for Computing Machinery, New York, NY, USA, 367–376. https://doi.org/10.1145/2207676.2207727

[17] Solon Barocas and Andrew Selbst. 2016. Big Data's Disparate Impact. *California Law Review* 671 (2016).

[18] Timothy Bartkoski, Ellen Lynch, Chelsea Witt, and Cort Rudolph. 2018. A Meta-Analysis of Hiring Discrimination Against Muslims and Arabs. *Personnel Assessment and Decisions* 4, 2 (2018).

[19] Eric P. Baumer and M.S. Silberman. 2011. When the implication is not to design (technology). In *Proceedings of the 2011 SIGCHI Conference on Human Factors in Computing Systems.* Association for Computing Machinery, 2271–2274.

[20] Piotr Bobkowski and Lisa Pearce. 2011. Baring Their Souls in Online Profiles or Not? Religious Self-Disclosure in Social Media. *Journal for the Scientific Study of Religion* 50, 4 (2011), 744–762.

[21] Breda Bova. 2000. Mentoring Revisited: The Black woman's experience. *Mentoring & Tutoring: Partnership in Learning* 8 (2000), 5–16. https://doi.org/10.1080/713685511

[22] Hannah Bradby. 2007. Watch out for the Aunties! Young British Asians' accounts of identity and substance use. *Sociology of Health & Illness* 29, 5 (2007), 656–672.

[23] Carly Brandenburg. 2008. The Newest Way to Screen Job Applicants: A Social Networker's Nightmare. *Federal Communications Law Journal* 60, 3 (2008).

[24] Alex Braunstein, Laura Granka, and Jessica Staddon. 2011. Indirect Content Privacy Surveys: Measuring Privacy without Asking about It. In *Proceedings of the Seventh Symposium on Usable Privacy and Security* (Pittsburgh, Pennsylvania) *(SOUPS '11)*. Association for Computing Machinery, New York, NY, USA, Article 15, 14 pages. https://doi.org/10.1145/2078827.2078847

[25] Carolyn Brodie, Clare-Marie Karat, John Karat, and Jinjuan Feng. 2005. Usable Security and Privacy: A Case Study of Developing Privacy Management Tools. In *Proceedings of the 2005 Symposium on Usable Privacy and Security* (Pittsburgh, Pennsylvania, USA) *(SOUPS '05)*. Association for Computing Machinery, New York, NY, USA, 35–43. https://doi.org/10.1145/1073001.1073005

[26] Deana Brown, Victoria Ayo, and Rebecca E. Grinter. 2014. Reflection through design: immigrant women's self-reflection on managing health and wellness. , 1605–1614 pages. https://doi.org/10.1145/2556288.2557119

[27] Victoria Brown and E. Daly Vaughn. 2011. The Writing on the (Facebook) Wall: The Use of Social Networking Sites in Hiring Decisions. *Journal of Business and Psychology* 26, 2 (2011), 219–225.

[28] Jenna Burrell. 2016. How the Machine 'Thinks': Understanding Opacity in Machine Learning Algorithms. *Big Data & Society* (2016).

[29] Joan Burrelli. [n.d.]. *Women of Color in STEM Education and Employment.* Retrieved September 28, 2020 from https://www.nsf.gov/od/oia/activities/ceose/mini-symp-pres/Women_of_color_stem_Oct2009/Oct27/JoanBurrelliv2.pdf

[30] Louise Cainkar. 2009. *Homeland Insecurity: The Arab American and Muslim American Experience After 9/11.* Russell Sage Foundation.

[31] Pew Research Center. 2015. *Searching for Work in the Digital Era.* https://www.pewresearch.org/internet/2015/11/19/searching-for-work-in-the-digital-era/

[32] Pew Research Center. 2017. *Demographic portrait of Muslim Americans.* https://www.pewforum.org/2017/07/26/demographic-portrait-of-muslim-americans/

[33] Pew Research Center. 2017. *U.S. Muslims Concerned About Their Place in Society, but Continue to Believe in the American Dream.* https://www.pewforum.org/2017/07/26/findings-from-pew-research-centers-2017-survey-of-us-muslims/

[34] Joey Chiang and Rachael Berkoff. 2017. *How are Pre-Hire Assessments Contributing to Unbiased and More Targeted, Successful Hires?* HowarePre-HireAssessmentsContributingtoUnbiasedandMoreTargeted,SuccessfulHires?

[35] Judith Clair, Joy Beatty, and Tammy Maclean. 2005. Out of Sight but Not out of Mind: Managing Invisible Social Identities in the Workplace. *The Academy of Management Review* 30, 1 (2005), 78–95.

[36] Patricia Hill Collins and Sirma Bilge. 2020. *Intersectionality.* John Wiley & Sons.

[37] Gwendolyn M Combs. 2003. The duality of race and gender for managerial African American women: Implications of informal social networks on career advancement. *Human Resource Development Review* 2, 4 (2003), 385–405.

[38] Juliet Corbin and Anselm Strauss. 1998. *Basics of Qualitative Research Techniques and Procedures for Developing Grounded Theory.* Sage Publications.

[39] Kimberlé Crenshaw. 1989. Demarginalizing the intersection of race and sex: A black feminist critique of antidiscrimination doctrine, feminist theory and antiracist politics. *u. Chi. Legal f.* (1989), 139.

[40] Kimberlé Crenshaw. 1991. Mapping the margins: Identity politics, intersectionality, and violence against women. *Stanford Law Review* 43, 6 (1991), 1241–1299.

[41] H. Kristl Davison, Catherine Maraist, and Mark Bing. 2011. Friend or Foe? The Promise and Pitfalls of Using Social Networking Sites for HR Decisions. *Journal of Business and Psychology* 26 (2011), 153–159.

[42] Sidhu Dawinder. 2007. The Chilling Effect of Government Surveillance Programs on the Use of the Internet by Muslim-Americans. *The University of Maryland Law Journal of Race, Religion, Gender & Class* 7, 2 (2007).

[43] Patricia de Vries and Willem Schinkel. 2019. Algorithmic anxiety: Masks and camouflage in artistic imaginaries of facial recognition algorithms. *Big Data & Society* (2019).

[44] Catherine D'Ignazio and Lauren Klein. 2020. *"4. What Gets Counted Counts".* https://data-feminism.mitpress.mit.edu/pub/h1w0nbqp

[45] Griffin Sims Edwards and Stephen Rushin. 2018. The effect of President Trump's election on hate crimes. *Available at SSRN 3102652* (2018).

[46] James R. Elliot. 2001. Referral hiring and ethnically homogeneous jobs: How prevalent is the connection and for whom? *Social Science Research,* 30, 3 (2001), 401–425.

[47] Brian Elzweig and Donna Peeples. 2009. Using Social Networking Web Sites in Hiring and Retention Decisions. *S.A.M. Advanced Management Journal* 74, 4 (2009), 27–35.

[48] Kayla Follmer, Isaac Sabat, and Rose Siuta. 2020. Disclosure of stigmatized identities at work: An interdisciplinary review and agenda for future research. *Journal of Organizational Behavior* 41, 2 (2020), 169–184.

[49] Andrew J. Fuligni, Jeannette Alvarez, Meredith Bachman, and Diane N. Ruble. 2005. Family obligation and the academic motivation of young children from immigrant families. *Developmental pathways through middle childhood: Rethinking contexts and diversity as resources* (2005), 261–282.

[50] Sylvia Fuller and Leah Vosko. 2008. Temporary Employment and Social Inequality in Canada: Exploring Intersections of Gender, Race and Immigration Status. *Social Indicators Research* 88 (2008), 31–50.

[51] Steve Garner and Saher Selod. 2015. The Racialization of Muslims: Empirical Studies of Islamophobia. *Critical Sociology* 41, 1 (2015).

[52] Susan Gelman and Cristine Legare. 2011. Concepts and folk theories. *Concepts and folk theories* 40 (2011), 379–398.

[53] Sonia Ghumman and Ann Marie Ryan. 2013. Not welcome here: Discrimination towards women who wear the Muslim headscarf. *Human Relations* 66, 5 (2013), 671–698.

[54] Lisa Given. 2008. *The SAGE Encyclopedia of Qualitative Research Methods.* Sage Publications.

[55] Laura Gonzales. 2019. Designing for intersectional, interdependent accessibility: a case study of multilingual technical content creation. *Commun. Des. Q. Rev* 6, 4 (2019), 35–45. https://doi.org/10.1145/3309589.3309593

[56] Jan Hajny, Petr Dzurenda, and Lukas Malina. 2014. Privacy-PAC: Privacy-Enhanced Physical Access Control. In *Proceedings of the 13th Workshop on Privacy in the Electronic Society* (Scottsdale, Arizona, USA) *(WPES '14).* Association for Computing Machinery, New York, NY, USA, 93–96. https://doi.org/10.1145/2665943.2665969

[57] Anna Hoffman. 2019. Where fairness fails: data, algorithms, and the limits of anti-discrimination discourse. *Information, Communication & Society* 22, 7 (2019), 900–915.

[58] Evangelina Holvino and Stacy Blake-Beard. 2004. Women discussing their differences: A promising trend. *The Diversity Factor* 12 (2004).

[59] John Horton. 2017. The Effects of Algorithmic Labor Market Recommendations: Evidence from a Field Experiment. *Journal of Labor Economics* 35, 2 (2017).

[60] Jøri Horverak, Hege Høivik Bye, Gro M. Sandal, and Ståle Pallesen. 2013. Managers' Evaluations of Immigrant Job Applicants: The Influence of Acculturation Strategy on Perceived Person-Organization Fit (P-O Fit) and Hiring Outcome. *Journal of Cross-Cultural Psychology* 44, 1 (2013).

[61] Samia Ibtasam, Lubna Razaq, Maryam Ayub, Jennifer R. Webster, Syed Ishtiaque Ahmed, and Richard Anderson. 2019. "My cousin bought the phone for me. I never go to mobile shops." The Role of Family in Women's Technological Inclusion in Islamic Culture. In *Proceedings of the 2019 ACM Conference on Computer-Supported Cooperative Work Social Computing.* 1–33.

[62] Syed Ishtiaque Ahmed, Nova Ahmed, Faheem Hussain, and Neha Kumar. 2016. Computing beyond gender-imposed limits. , Article 6 pages. https://doi.org/10.1145/2926676.2926681

[63] Pamela J. Wisniewski, Neha Kumar, Christine Bassem, Sarah Clinch, Susan M. Dray, Geraldine Fitzpatrick, Cliff Lampe, Michael Muller, and Anicia N. Peters. 2018. Intersectionality as a Lens to Promote Equity and Inclusivity within SIGCHI. , Paper panel08 pages. https://doi.org/10.1145/3170427.3186324

[64] Amaney Jamal and Nadine Naber. 2008. *Race and Arab Americans Before and After 9/11: From Invisible Citizens to Visible Subjects.* Syracuse University Press.

[65] Amaney A Jamal. 2017. Trump (ing) on Muslim Women: The Gendered Side of Islamophobia. *Journal of Middle East Women's Studies* 13, 3 (2017), 472–475.

[66] Gaetane Jean-Marie, Vicki A Williams, and Sheila L Sherman. 2009. Black women's leadership experiences: Examining the intersectionality of race and gender. *Advances in Developing Human Resources* 11, 5 (2009), 562–581.

[67] Yasmin B Kafai, Gabriela T Richard, and Brendesha M Tynes. 2017. *Diversifying Barbie and Mortal Kombat: Intersectional perspectives and inclusive designs in gaming.* Lulu. com.

[68] Kimberly Kahn, Katherine Spencer, and Jack Glaser. 2013. *Online prejudice and discrimination: From dating to hating.* Oxford University Press.

[69] Philip Kasinitz. 2008. Becoming American, Becoming Minority, Getting Ahead: The Role of Racial and Ethnic Status in the Upward Mobility of the Children of Immigrants. *The ANNALS of the American Academy of Political and Social Science* 620, 1 (2008).

[70] Sarah Kaufman. 2019. The Criminalization of Muslims in the United States. *Qualitative Sociology* 42 (2019), 521–542.

[71] Jennifer King, Airi Lampinen, and Alex Smolen. 2011. Privacy: Is There an App for That?. In *Proceedings of the Seventh Symposium on Usable Privacy and Security* (Pittsburgh, Pennsylvania) *(SOUPS '11).* Association for Computing Machinery, New York, NY, USA, Article 12, 20 pages. https://doi.org/10.1145/2078827.2078843

[72] Spyros Kokolakis. 2017. Privacy attitudes and privacy behaviour: A review of current research on the privacy paradox phenomenon. *Computers security* 64 (2017).

[73] Neha Kumar and Naveena Karusala. 2019. Intersectional computing. *interactions* 26, 2 (2019), 50–54.

[74] Nazita Lajevardi and Kassra AR Oskooii. 2018. Old-fashioned racism, contemporary islamophobia, and the isolation of Muslim Americans in the age of Trump. *Journal of Race, Ethnicity and Politics* 3, 1 (2018), 112–152.

[75] Jun Liu, Ying Liu, Pei-Luen Patrick Rau, Hui Li, Xia Wang, and Dingjun Li. [n.d.]. How socio-economic structure influences rural users' acceptance of mobile entertainment. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. 2203–2212.

[76] Saba Mahmood. 2006. Feminist theory, agency, and the liberatory subject: Some reflections on the Islamic revival in Egypt. *Temenos-Nordic Journal of Comparative Religion* 42, 1 (2006).

[77] Jochen Malinowski, Tobias Keim, Oliver Wendt, and Tim Weitzel. 2006. Matching People and Jobs: A Bilateral Recommendation Approach. In *Proceedings of the 39th Annual Hawaii International Conference on System Sciences*. 137.

[78] Philip Meyer and Shawn McIntosh. 1992. The USA TODAY INDEX OF ETHNIC DIVERSITY. *International Journal of Public Opinion Research* 4, 1 (1992), 51–58.

[79] Shakir Mohamed, Png Marie-Therese, and William Isaac. 2020. Decolonial AI: Decolonial theory as sociotechnical foresight in artificial intelligence. *Philosophy & Technology* 33, 4 (2020), 659–684.

[80] Al-Yagout Nadia. 2017. Who is a 'Person of Color?'. *Humboldt Journal of Social Relations* 39 (2017), 5–7. www.jstor.org/stable/90007864

[81] Kumar Neha. 2015. The gender-technology divide or perceptions of non-use? *First Monday* 20, 11 (2015). https://doi.org/10.5210/fm.v20i11.6300

[82] Safiya Noble. 2018. *Algorithms of Oppression: How Search Engines Reinforce Racism*. NYU Press.

[83] Anne Occhialino and Daniel Vail. 2005. Why the EEOC (Still) Matters. *Hofstra Labor & Employment Law Journal* 22, 2 (2005).

[84] Izhar Oplatka and Orit Lapidot. 2012. Muslim women in graduate studies: some insights into the accessibility of higher education for minority women students. *Studies in Higher Education* 37, 3 (2012), 327–344.

[85] Julia Ostheimer and Sarfraz Iqbal. 2019. Privacy in Online Dating: Does It Matter?. In *Proceedings of the 3rd International Conference on Cryptography, Security and Privacy* (Kuala Lumpur, Malaysia) *(ICCSP '19)*. Association for Computing Machinery, New York, NY, USA, 71–75. https://doi.org/10.1145/3309074.3309085

[86] Paul Oyer and Scott Schaefer. 2010. Personnel Economics: Hiring and Incentives. *Handbook of Labor Economics* 4 (2010).

[87] Olubunmi Basirat Oyewuwo-Gassikia. 2016. American Muslim Women and Domestic Violence Service Seeking: A Literature Review. *Affilia* 31, 4 (2016), 450–462. https://doi.org/10.1177/0886109916654731

[88] Olubunmi Basirat Oyewuwo-Gassikia. 2017. *Influence of Identity on Domestic Violence Response: A Study of Black Muslim Women*. Thesis.

[89] Sarah Parvini and Ellis Simani. 2019. *Are Arabs and Iranians white? Census says yes, but many disagree.* latimes.com/projects/la-me-census-middle-east-north-africa-race/

[90] Elizabeth Pascoe and Laura Smart Richman. 2009. Perceived discrimination and health: A meta-analytic review. *Psychological Bulletin* 135, 4 (2009), 531–554.

[91] Menahem Pasternak. 2011. Employment Discrimination: Some Economic Definitions, Critique and Legal Implications. *North Carolina Central Law Review* 33, 2 (2011).

[92] Richard Pate. 2012. Invisible Discrimination: Employers, Social Media Sites and Passwords in the U.S. *Journal of Business and Psychology* 12, 3 (2012), 133–146.

[93] Dino Pedreshi, Salvatore Ruggieri, and Franco Turini. [n.d.]. Discrimination-aware data mining. In *Proceedings of the 14th ACM SIGKDD international conference on Knowledge discovery and data mining*. 560–568.

[94] Lincoln Quillian, Devah Pager, Ole Hexel, and Arnfinn Midtbøen. 2017. The persistence of racial discrimination in hiring. *Proceedings of the National Academy of Sciences* (2017).

[95] Hawra Rabaan, Alyson L. Young, and Lynn Dombrowski. 2021. Daughters of Men: Saudi Women's Sociotechnical Agency Practices in Addressing Domestic Abuse. *Proc. ACM Hum.-Comput. Interact.* 4, CSCW3, Article 224 (Jan. 2021), 31 pages. https://doi.org/10.1145/3432923

[96] Angel Rabasa, Cheryl Benard, Lowell Schwartz, and Peter Sickle. 2007. *Building Moderate Muslim Networks*. RAND Corporation.

[97] Manish Raghavan, Solon Barocas, Jon Kleinberg, and Karen Levy. 2020. Mitigating bias in algorithmic hiring: evaluating claims and practices. In *Proceedings of the 2020 Conference on Fairness, Accountability, and Transparency*. 469–481.

[98] Yolanda A Rankin and Jakita O Thomas. 2019. Straighten up and fly right: rethinking intersectionality in HCI research. *interactions* 26, 6 (2019), 64–68.

[99] Cross Tab Market Research. 2010. *Online Reputation in a Connected World.* http://download.microsoft.com/download/B/8/2/B8282D75-433C-4B7E-B0A0-FFA413E20060/online_reputation.pdf

[100] Paul Resnick and Hal Varian. 1997. Recommender systems. *Commun. ACM* 40, 3 (1997), 56–58.

[101] Beth Richie. 1985. Battered Black women a challenge for the Black community. *The Black Scholar* 16, 2 (1985), 40–44.

[102] Alex Rosenblat, Tamara Kneese, and Danah Boyd. 2014. Networked Employment Discrimination. *Open Society Foundations' Future of Work Commissioned Research Papers* (2014).

[103] Carl Rosenfeld. 1975. Jobseeking Methods Used by American Workers. *Monthly Labor Review* 98, 8 (1975), 39–42.

[104] Tina K Sacks. 2018. Performing Black womanhood: A qualitative study of stereotypes and the healthcare encounter. *Critical Public Health* 28, 1 (2018), 59–69.

[105] Christina Scharff. 2011. Disarticulating feminism: Individualization, neoliberalism and the othering of 'Muslim women'. *European Journal of Women's Studies* 18, 2 (2011), 119–134.

[106] Janine Schindler. 2019. *The Benefits Of Cultural Diversity In The Workplace.* https://www.forbes.com/sites/forbescoachescouncil/2019/09/13/the-benefits-of-cultural-diversity-in-the-workplace/#690709e071c0

[107] Ari Schlesinger, W. Keith Edwards, and Rebecca E. Grinter. 2017. Intersectional HCI: Engaging Identity through Gender, Race, and Class. , 5412–5427 pages. https://doi.org/10.1145/3025453.3025766

[108] Sertaç Sehlikoglu. 2018. Revisited: Muslim Women's agency and feminist anthropology of the Middle East. *Contemporary Islam* 12, 1 (2018), 73–92.

[109] Tahseen Shams. 2018. Visibility as Resistance by Muslim Americans in a Surveillance and Security Atmosphere. *Sociological Forum* 33, 1 (2018), 73–94.

[110] Derek Silva. 2017. The Othering of Muslims: Discourses of Radicalization in the New York Times, 1969–2014. *Sociological Forum* 32, 1 (2017), 138–161.

[111] Sandra Smith. 2000. Mobilizing Social Resources: Race, Ethnic, and Gender Differences in Social Capital and Persisting Wage Inequalities. *The Sociological Quarterly* 41, 4 (2000), 509–537.

[112] Claude M. Steele and Joshua Aronson. 1995. Stereotype threat and the intellectual test performance of African Americans. *Journal of Personality and Social Psychology* 69, 5 (1995), 797–811. https://doi.org/10.1037/0022-3514.69.5.797

[113] Angelika Strohmayer, Jenn Clamen, and Mary Laing. 2019. Technologies for Social Justice: Lessons from Sex Workers on the Front Lines. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*. 1–14.

[114] Sharifa Sultana, Franois Guimbretiere, Phoebe Sengers, and Nicola Dell. 2018. Design Within a Patriarchal Society: Opportunities and Challenges in Designing for Rural Women in Bangladesh. , 13 pages. https://doi.org/10.1145/3173574.3174110

[115] J. O. Thomas, N. Joseph, A. Williams, C. Crum, and J. Burge. [n.d.]. Speaking Truth to Power: Exploring the Intersectional Experiences of Black Women in Computing. In *2018 Research on Equity and Sustained Participation in Engineering, Computing, and Technology (RESPECT)*. 1–8. https://doi.org/10.1109/RESPECT.2018.8491718

[116] Eileen M Trauth, Curtis Cain, KD Joshi, Lynette Kvasny, and Kayla Booth. 2012. *Understanding underrepresentation in IT through intersectionality.* 56–62.

[117] Eileen M. Trauth, Curtis C. Cain, K.D. Joshi, Lynette Kvasny, and Kayla M. Booth. 2016. The Influence of Gender-Ethnic Intersectionality on Gender Stereotypes about IT Skills and Knowledge. *SIGMIS Database* 47, 3 (2016), 9–39. https://doi.org/10.1145/2980783.2980785

[118] Chad Van Iddekinge, Steven Lanivich, Phillip Roth, and Elliott Junco. 2016. Social Media for Selection? Validity and Adverse Impact Potential of a Facebook-Based Assessment. *Journal of Management* 42, 7 (2016).

[119] Sarah Vieweg and Adam Hodges. 2016. Surveillance & Modesty on Social Media: How Qataris Navigate Modernity and Maintain Tradition. In *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing* (San Francisco, California, USA) *(CSCW '16)*. Association for Computing Machinery, New York, NY, USA, 527–538. https://doi.org/10.1145/2818048.2819966

[120] Jessica Vitak, Katie Shilton, and Zahra Ashktorab. 2016. Beyond the Belmont principles: Ethical challenges, practices, and beliefs in the online data research community. In *Proceedings of the 19th ACM conference on computer-supported cooperative work & social computing*. Association for Computing Machinery, 941–953.

[121] Michael Wallace, Bradley Wright, and Allen Hyde. 2014. Religious Affiliation and Hiring Discrimination in the American South: A Field Experiment. *Social Currents* 1, 2 (2014).

[122] Quenette L Walton and Olubunmi Basirat Oyewuwo-Gassikia. 2017. The case for BlackGirlMagic: Application of a strengths-based, intersectional practice framework for working with black women with depression. *Affilia* 32, 4 (2017), 461–475.

[123] Earnest Wheeler and Tawanna Dillahunt. [n.d.]. Navigating the Job Search as a Low-Resourced Job Seeker. In *roceedings of the 2018 CHI Conference on Human Factors in Computing Systems*. 1–10.

[124] Marisol Wong-Villacres, Arkadeep Kumar, Aditya Vishwanath, Naveena Karusala, Betsy DiSalvo, and Neha Kumar. 2018. Designing for Intersections. , 45–58 pages. https://doi.org/10.1145/3196709.3196794

[125] Xing Xie, Jianxun Lian, Zheng Liu, Xiting Wang, Fangzhao Wu, Hongwei Wang, and Zhongxia Chen. 2018. *Personalized Recommendation Systems: Five Hot Research Topics You Must Know.* https://www.microsoft.com/en-us/research/lab/microsoft-research-asia/articles/personalized-recommendation-systems/

[126] Lynette Yarger, Fay Cobb Payton, and Bikalpa Neupane. 2019. Algorithmic equity in the hiring of underrepresented IT job candidates. *Online Information Review* 44, 2 (2019), 383–395.

[127] Indi Young. 2008. *Mental Models: Aligning Design Strategy with Human Behavior.* Rosenfeld Media.

[128] Seth Zimmerman. 2019. Elite Colleges and Upward Mobility to Top Jobs and Top Incomes. *American Economic Review* 109, 1 (2019).

[129] Eva Zschirnt and Didier Ruedin. 2016. Ethnic discrimination in hiring decisions: a meta-analysis of correspondence tests 1990–2015. *Journal of Ethnic and Migration Studies* 42, 7 (2016), 1115–1134.