"I'm Constantly in This Dilemma": How Migrant Technology Professionals Perceive Social Media Recommendation Algorithms

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Migrants experience unique needs and use social media, in part, to address them. While prior work has primarily focused on migrant populations who are vulnerable socio-economically and legally, less is known about how highly educated migrant populations use social media. Additionally, a growing body of work focuses on algorithmic perceptions and resistance, primarily from laypersons' perspectives rather than people with high degrees of algorithmic literacy. To address these gaps, we draw from interviews with 20 Chinese-born migrant technology professionals. We found that social media played an integral role in helping participants meet their unique needs but that participants perceived social media algorithms to negatively shape the content they consumed, which ultimately influenced their mobility-related aspirations and goals. We discuss how findings challenge the promise of algorithmic literacy and contribute to a human-centered conceptualization of algorithmic mobility as socially and algorithmically produced motion that concerns the movement of physical bodies and interactions as well as associated digital movement. Specifically, we introduce a fourth dimension of algorithmic mobility: algorithmically curated content on social media and elsewhere based on facets of users' identities directly influences users' mobility-related aspirations and goals, such as how, when, and where they go. Finally, we call for transnational policy interventions related to algorithms and highlight design considerations around content moderation, algorithmic user-control, and contestability.

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

Additional Key Words and Phrases: social media, algorithms, algorithmic literacy, algorithmic resistance, algorithmic mobility, migration, diaspora, China

ACM Reference Format:
Cassidy Pyle, Ben Zefeng Zhang, Oliver L. Haimson, and Nazanin Andalibi. 2023. "I'm Constantly in This Dilemma": How Migrant Technology Professionals Perceive Social Media Recommendation Algorithms. *Proc. ACM Hum.-Comput. Interact.* 8, CSCW1, Article 65 (April 2023), 33 pages. https://doi.org/10.1145/3637342

1 INTRODUCTION

Most people make mobility-related decisions in their everyday lives (e.g., where to eat, receive medical care, or relocate for jobs). Mobility decisions sometimes involve uncertainties and could shape "life changes" [2]. The basic signifier of mobility is "getting from point A to point B" [37], which often includes larger-scale human movements such as transnational migration and local processes of daily transportation and movement [64]. Although mobility is not a novel phenomenon,

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ACM 2573-0142/2023/4-ART65
https://doi.org/10.1145/3637342

the intensification of transnational connectedness and the advancement of machine learning technologies [36] are transforming mobility's nature, purpose, and experience in profound ways. For example, algorithms powered by digital trace data and mediated by digital platforms are beginning to emerge as a mechanism to control and govern mobility among workers [85, 100]. Despite the importance of mobility in digital contexts and the prevalence of mobility research in other disciplines, social computing scholars have pointed out that mobility has not received adequate attention in human-computer interaction (HCI) [128]. They argue that HCI and social science research related to the "new mobilities" paradigm [110] could benefit from better conversing with each other [128]. As such, our work aims to bridge the critical gap between HCI and social science scholarship around mobility.

Scholarship at the intersection of migration and social computing has demonstrated both the positive and negative impacts that social media use has on migrants' everyday lives as they traverse national boundaries, experience disruption to their pre-existing networks, and face unique uncertainties [3, 43, 58, 68, 71, 132]. In HCI and computer-supported cooperative work (CSCW), research on migration tends to focus on migrant populations who face socio-economic and legal vulnerabilities, often possessing lower education and literacy and facing precarious political and legal situations [6, 24, 25, 41, 103, 121]. This body of work gives limited attention to the *hyper-selectivity* of migrants. Hyper-selectivity denotes the phenomenon within transnational migrant populations where there is "a higher percentage of college graduates among immigrants compared to non-migrants from their country of origin, and a higher percentage of college graduates compared to the host country" [82]. In the context of migration, hyper-selected migrants may face marginalization on ethnic, racial, and national dimensions but, importantly, tend to (though not always) possess socio-economic privilege. To address this research gap, we focus on one particular hyper-selected migrant group, Chinese-born migrant technology professionals who are highly educated and possess advanced technical skills. Specifically, the hyper-selective migrants in our study include elite technology users and technology producers. Importantly, the concept of hyper-selectivity offers a theoretical and empirical link between migrants' "home and host societies," [123] which aptly mirrors the lived experiences of participants in our study who have migrated from China to the U.S. to advance their careers in the technology industry while simultaneously grappling with racism and marginalization due to their Chinese identity [98]. Hyper-selectivity also serves as an ideal framing to examine algorithms and mobility because migrants often use algorithmically-driven social media platforms from both their home and host societies to meet immediate, functional needs and more abstract needs for community and self-expression as they adjust to life in a new country. Taken together, hyper-selected migrants are important to include in research, as 1) prior work at the intersection of mobility, migration, and HCI has predominantly focused on low socio-economic migrant groups like refugees who may have different challenges and needs that inform their use of social and mobile media technologies, and 2) hyper-selected migrants may possess the algorithmic literacy that prior work argues is necessary to resist the harmful impact of social media algorithms.

Additionally, there is a growing interest in understanding the impact of algorithmic systems among migrants [31, 65, 79, 81, 105, 127]. In HCI and CSCW, a growing body of literature examines how algorithms directly mediate mobility [56, 100]. For instance, prior studies often focus on border control systems [81, 105, 127] and the impact of algorithms in immigration enforcement [65, 79]. In mobility studies, geographer Tim Cresswell coined the term "algorithmic mobility" to refer to the encoded measurement of mobilities, such as algorithms for tracking, tracing, and assigning "risk scores" [1] during COVID-19. However, less is known about how algorithms may *indirectly* shape transnational mobility: specifically, how social media algorithms are perceived to shape the

types of (un)supportive content migrants consume and how exposure to this content influences their mobility-related aspirations and goals.

Moreover, scholarship on how people perceive, understand, and even resist algorithms tends to focus on laypersons [46, 51, 74, 76]. Little attention is given to the perceptions of technology professionals, who exhibit greater degrees of algorithmic literacy. Algorithmic literacy has been proposed as a way for individuals to exhibit greater control, or "sovereignty" over the influence of algorithms over their lives [99]. If this is true, technology professionals are well-suited to enact agency over and/or resist the algorithms they experience daily, including those that underpin social media platforms. Therefore, in this study, we focus on a group of hyper-selected migrants, specifically, Chinese-born migrant technology professionals, as they 1) use algorithmically-driven social media to meet their particular needs as migrants and technology professionals and 2) possess a degree of algorithmic literacy that could uniquely position them to be able to enact some degree of control over the perceived influence of algorithms.

Thus, we address the following research questions:

RQ1: *How do highly educated Chinese-born migrant technology professionals use social media to meet their needs, and how do they perceive algorithms that underpin these social media platforms?*

RQ2: *How do Chinese-born migrant technology professionals' use of social media and perceptions of the algorithms that underpin social media platforms inform their lives as migrants, including their mobility-related aspirations and goals?*

To answer these research questions, we conducted semi-structured, in-depth interviews (n =*20*) with Chinese-born migrant technology professionals to understand their experiences as migrants, their use of social media, and how they perceived social media algorithms to impact their everyday lives and mobility-related aspirations and goals.

This work makes the following contributions. First, we contribute an empirical understanding of the needs of Chinese-born migrant technology professionals — an important part of highly skilled and hyper-selected migrant labor in the U.S. — and the role(s) they perceived social media platforms and their underlying algorithms to play in their everyday lives. Second, our analysis revealed that participants were highly algorithmically literate yet still could not enact meaningful or unique forms of algorithmic resistance [76]. Instead, they engaged in similar strategies that laypersons use, as documented by prior work [46, 51, 74, 76]. Thus, we complicate prior findings (e.g., [99]) by questioning the promise of algorithmic literacy. Specifically, aligned with Cotter's claim [35], we argue that algorithmic literacy is a necessary but insufficient precondition of algorithmic agency and meaningful algorithmic resistance. Third, building on geographer Tim Cresswell's early conception of algorithmic mobility [1] and previous scholarship around algorithmic management [56, 84, 100] and algorithmic identity [29, 76, 88, 112], we contribute to a human-centered conceptualization of algorithmic mobility in HCI *as socially and algorithmically produced motion that concerns the movement of physical bodies and interactions as well as associated digital movement.* Specifically, we contribute to crystallizing the dimensions of algorithmic mobility by bridging HCI and social science research and introducing a new fourth dimension. That is, *algorithmically curated content on social media based on facets of users' identities* directly influences their mobility-related aspirations and goals, such as how and where they go. Lastly, we call for transnational policy interventions related to algorithms. This work also surfaces theoretical implications and policy and design recommendations around content moderation, algorithmic user-control, and contestability.

2 RELATED WORK

2.1 Study Context: Chinese-born Migrant Technology Professionals

Chinese-born migrant technology professionals are a part of the Chinese diaspora communities, globally dispersed groups of people of Chinese origin and descent living outside of the Chinese mainland, Taiwan, Hong Kong, and Macau [86, 91, 96, 122]. The Chinese diaspora communities are also one of the fastest-growing populations in the U.S., which has been one of the main destinations for Chinese migrants since 1785 [40]. Unlike prior work in HCI, which tends to look at vulnerable migrants with lower rates of literacy and who often face challenges concerning socio-economic status and precarious legal situations [6, 24, 25, 41, 103, 121], the Chinese diaspora communities are *hyper-selected*, having a large portion of well-educated members. A growing number of community members work in the U.S. technology industry in roles such as software engineer and data scientist. Meanwhile, as a part of the larger Asian or Asian American community, Chinese diaspora communities have historically been viewed as an "invisible minority" [77] and "perpetual foreigners" [83] and have experienced waves of discrimination and violence [98]. Members of Chinese diaspora communities experience unique challenges and uncertainties socially and politically, such as experiencing ethnic and racial discrimination, seeking legal immigration status, and securing management positions as migrants [82].

2.2 Migration, Mobility, and Social Media

Scholarship in HCI and CSCW has increasingly focused on the intersection of social media and migration in the last decade [102]. This nexus of research grows in importance as migration and mobility increase. According to Pew Research Center, more than one million migrants arrive in the U.S. annually, joining over 40 million foreign-born people already living in the U.S. [27]. Migrating to a new country is one major example of hypermobility, which often refers to long-distance, transnational movement [91]. Scholars have demonstrated that information and communication technologies (ICTs), mainly social media platforms, play an important role for migrants [3, 43, 68, 71, 132]. Despite being geographically dispersed, migrants can leverage social media to maintain strong and weak ties with individuals from their homelands and develop new strong and weak ties in their current country, thus facilitating the development of social capital [43, 68, 132].

In addition to helping migrants develop social capital and meet their functional needs, social media can be particularly beneficial in enabling identity work and affiliation with other migrants. Prior work in diaspora and migration studies highlights how individuals in diaspora manage the "push-pull" of identity work [16, 63] and their "in-between" experience [50]. That is, migrants manage their identities as they try to integrate into their new country while also maintaining connections with people from their country of origin [16, 63]. This phenomenon has been conceptualized as "sociotechnical adaptation," wherein migrants use various technologies and networks in both their immediate and distant surroundings to adapt to new environments [70]. Social media allow migrants to enact their cultural identities and meet their information needs [43, 68, 132]. For instance, by joining identity or interest-based groups (e.g., ethnicity, professional development, location), migrants can seek social support within an inclusive online environment [43, 55, 97]. Thus, social media can be helpful for migrant groups who, as research demonstrates, face longer-term problems related to cultural differences, social isolation, and racial discrimination [17, 70].

Although social media can be beneficial, it can also challenge marginalized groups, including migrants. Such challenges can center on privacy [58, 67, 109], self-presentation concerns [59], online disclosure, [9, 60, 109] and online racism [20, 92]. For example, Slupska et al. [113] highlight the privacy and security concerns of migrant domestic workers, including government surveillance, scams and harassment, and employer monitoring. Additionally, in the face of the attempted WeChat

ban, members of the Chinese diaspora communities faced various challenges, such as economic difficulties and disruption of community-building efforts [135]. Taken together, social media can present notable barriers for migrants and serve as a source of support and community.

In HCI and social computing, research related to migration tends to focus on topics such as general ICT access and usage, service access, and migrants' more tangible and pragmatic needs. Yet, scholars in this space identify migrants' long-term settlement needs and more abstract challenges as pressing issues for future work to investigate [102, 104]. Moreover, research about migration overwhelmingly involves migrant populations who are low-resourced, face socio-economic and legal vulnerabilities, and tend to be less educated and literate [6, 24, 25, 41, 103, 104, 121]. For instance, HCI scholars have investigated topics that include low-resourced migrants' immediate well-being [24, 121], adaptation challenges [6], and information access [32, 71, 101]. However, as Sabie et al. [104] note, "mobility is a route taken by people from diverse backgrounds in various contexts and for several purposes." With this in mind, we broaden the scope of the field of HCI's understanding of power and migration by focusing on a migrant population that is relatively privileged in possessing higher education and socio-economic stability. By focusing on migrants who at once experience socio-economic privilege as well as ethnic and racial marginalization, we hope to crystallize an understanding of how marginalization is mediated by technology and acquire a more holistic view of migrants' everyday interactions with social media. Additionally, scholarship on algorithmic perceptions and resistance tends to focus on the experience of laypersons; little attention is given to people who possess high degrees of algorithmic literacy, such as technology professionals [46, 51, 74, 76].

In addition, there is a growing interest in understanding the role of algorithmic systems in migration [31, 65, 79, 81, 105, 127]. Prior work primarily focuses on border control systems such as automated border control (ABC) [81, 105, 127] and the impact of algorithms in immigration enforcement [65, 79]. Despite scholars' increasing interest in investigating the impact of algorithmic systems on migration, less attention has focused on migrants' everyday experience with and perceptions of algorithms, specifically, the algorithms that underpin social media platforms. Thus, we examine how Chinese-born migrant technology professionals use social media to address their unique needs, how they perceive the algorithms that underpin social media platforms, and how these perceptions inform their lives as migrants, including their mobility-related aspirations and goals.

2.3 Social Support-Seeking, Identity, and Social Media

In the last section, we articulated how members of Chinese diaspora communities have used social media platforms to meet informational, social, and identity-based needs. While information-seeking can reduce anxieties, social media may also provide direct access to other forms of social support outlined by Cutrona & Suhr [39], such as emotional support (i.e., feeling good about one's emotions), esteem support (i.e., feeling good about oneself), and network support (i.e., feeling like there are people in your network who are able and willing to help you). These forms of support may aid migrants in settling into their new locations, building community, and thriving emotionally in their new environments.

In fact, social media has been shown to facilitate access to these various forms of social support for many marginalized or stigmatized groups, including but not limited to transgender adolescents [108], migrant domestic workers facing privacy and security risks [113], folks living with mental and physical illnesses [13, 30, 114], sexual abuse survivors [12], people experiencing pregnancy loss [9, 11] and infertility [94]. Additionally, social media can facilitate access to sources of support for folks facing specific life challenges (e.g., parents of children with special needs, see [8]) and

those undergoing major life transitions such as the transition to college [42], childbirth [15], and gender transition [59, 108].

Taken together, prior work illuminates the potential for social media to widen people's access to sources of social support across time and space, which can be particularly relevant for migrants as they traverse national boundaries, experience disruption to their prior routines, relationships, and networks, and experience unique uncertainties. Thus, social media can be a vital source of social support for migrants. However, the algorithms underpinning social media platforms may shape and even hinder social media use and support-seeking, carrying important implications for algorithmic literacy and resistance.

2.4 Algorithmic Literacy and Algorithmic Resistance

While social media platforms may facilitate access to supportive contacts and content, it is important to note how algorithms underpin social media platforms and curate personalized news feeds. Social media algorithms are notoriously opaque [93, 137], yet carry important ramifications for users. Scholars and practitioners alike have argued for the importance of *algorithmic literacy* to resist the hold that potentially problematic social media algorithms have over people's lives (e.g., [99]). In this section, we describe how scholars contend with notions of algorithmic awareness and literacy and how these understandings of algorithms may influence how users engage with, enact agency over, and resist them.

Algorithmic awareness has been conceptualized through the term "algorithmic media content awareness" or "the extent to which people hold accurate perceptions of what algorithms do in a particular media environment, as well as their impact on how users consume and experience media content" [134]. On the other hand, algorithmic literacy typically involves "the combination of users' awareness, knowledge, imaginaries, and tactics around algorithms" [120]. Other definitions consider algorithmic literacy as "the capacity and opportunity to be aware of both the presence and impact of algorithmically-driven systems on self- or collaboratively-identified goals and the capacity and opportunity to crystallize this understanding into a strategic use of these systems of accomplish said goals" [45]. These definitions highlight the dual components of 1) awareness of what algorithms are and, broadly, how they work to structure online experiences and 2) the actions that this awareness facilitates.

To this point, it is often argued that algorithmic literacy or algorithmic awareness can help assuage some of the negative impacts of potentially problematic algorithms on people's lives (e.g., [99]). For instance, Reviglio & Agosti introduce the term "algorithmic sovereignty" to denote "the moral right of a person to be the exclusive controller of one's own algorithmic life and, more generally, the right and capacity by citizens as well as democratic institutions to make self-determined choices on personalization algorithms and related design choices," and note that algorithmic literacy is a major mechanism by which users can achieve algorithmic sovereignty. Additionally, Bucher's [26] paper on algorithmic imaginaries contends both with the ways that users develop and disseminate algorithmic imaginaries in social means as well as the way these imaginaries shape their subsequent use of social media. As Bucher [26] notes, "users' perceptions about what the algorithm is and how it works to shape their orientation towards it," including how they share and consume content on platforms. Bucher [26] contends that these behavioral reactions that stem from one's algorithmic imaginary, in turn, mold the algorithm itself. Similarly, Dogruel et al. [49] argue that algorithmic literacy involves having the skills to cope with or influence algorithmic operations, and Zuboff [138] notes that an algorithmically literate public has the ability to hold designers of algorithms accountable. On the other hand, Swart [120] conducted interviews with young people and found that their algorithmic literacy or cognitive understanding did not necessarily translate into behaviors that helped these individuals resist or intervene to combat what algorithms do.

Taken together, there are mixed findings around whether algorithmic literacy and related constructs move beyond the realm of the cognitive and affective and have practical implications for how social media users can effectively control and/or resist the hold that they perceive algorithms to have over their social media consumption and, more broadly, their lives. However, this work primarily focuses on the perspectives of laypersons; little is known about how technology professionals who ostensibly possess higher degrees of algorithmic literacy make sense of and potentially resist algorithms in their everyday lives.

Thus, in the present study, we ask how highly educated Chinese-born migrant technology professionals 1) use social media to meet their needs, 2) perceive algorithms that underpin these social media platforms, and 3) how their perceptions of social media algorithms inform their mobility-related aspirations and goals and how they attempt to resist social media algorithms.

3 METHODS

3.1 Recruitment and Participants

To address our research questions, we conducted semi-structured, individual interviews with 20 Chinese-born migrant technology professionals. We recruited participants across different social media platforms, which include Telegram [1], WeChat[2], and RED[3]. Given the salience of WeChat and Telegram for Chinese-born migrant populations, as identified in prior work (e.g., [136]), we also joined multiple group chats for migrant technology professionals on these platforms to recruit participants. During all outreach, we were transparent in our research roles and asked permission to join closed groups. Additionally, we shared the study information and a link to the screening survey on our personal social media accounts, which was disseminated beyond our personal networks. No participants were individuals in our networks. We invited interested participants to fill out a screening survey that asked them demographic questions and the social media platforms they used before, during, and after migrating to the U.S. We received 158 responses from our screening survey and invited 30 people to join our study. Participants who met the following inclusion criteria (age 18+, from the Chinese mainland, moved to the U.S. to pursue a career in technology) were invited via email to participate in a 45-to-90-minute interview via Zoom, a video-conferencing platform. Ultimately, 20 individuals completed interviews. Participants all self-identified as technology professionals — 45% (9) were women and 55% (11) were men. They were hyper-selected migrants with high educational attainment: all completed at least a bachelor's degree (100%), and 16 had earned an advanced degree (80.0%) such as a Master's degree and/or a Ph.D. Participants held diverse technology and programming-related occupations ranging from Software Engineer to Data Scientist. We list additional socio-demographic details about participants in Table 1. Our study was reviewed and exempted by our university's Institutional Review Board, as it fell into an exemption category and was determined to pose no more than minimal risk to participants.

3.2 Data Collection and Analysis

We conducted individual, semi-structured, in-depth interviews with 20 participants as part of a broader data collection effort examining transnational migration from China to North America and social media use. Prior work on migration, mobility, and social media has frequently utilized quantitative approaches, such as Spyratos et al.'s [117] quantification of global international mobility patterns using Facebook Network Data. Yet, as Ponzanesi [95] notes, while quantitative approaches

[1]https://telegram.org/
[2]https://www.wechat.com/
[3]https://www.xiaohongshu.com/

Participant	Gender	Education Level	Occupation	Migration Year
Zihan	Female	Master's Degree	Software Engineer	2014
Xinyi	Female	Bachelor's Degree	Master's Student, Data Science	2016
Shiqi	Female	Master's Degree	Ph.D. Student, Computer Science	2019
Xue	Female	Master's Degree	Ph.D. Student, Info Systems	2016
Zihao	Male	Master's Degree	Software Engineer	2013
Haoxuan	Male	Bachelor's Degree	Software Engineer	2016
Rui	Male	Master's Degree	Machine Learning Engineer	2011
Jiaxiang	Male	Master's Degree	Chief Technology Officer	1999
Junjie	Male	Master's Degree	Data Scientist	2012
Yilin	Male	Master's Degree	Software Engineer	2004
Kaihao	Male	Master's Degree	Software Engineer	2016
Xiaolan	Female	Bachelor's Degree	Data Scientist	Not Disclosed
Fangxue	Female	Bachelor's Degree	Master's Student/Data Science Intern	2021
Huayang	Male	Master's Degree	Software Engineer	2008
Jiayi	Female	Master's Degree	Software Engineer	2015
Zhangyu	Female	Ph.D.	Software Engineer	2003
Cheng	Male	Master's Degree	Software Developer	2000
Nan	Female	Master's Degree	Data Science Intern	2012
Hongxi	Male	Master's Degree	Software Engineer	2008
Tao	Male	Ph.D.	Assistant Professor	2013

Table 1. Summary of Participant Socio-Demographic Information

are apt for examining mobility and migration-related issues at scale, a quantitative focus on "digital traces" may not be enough. Qualitative approaches can discover the *meanings* behind these traces in ways that explore temporal and emotional dimensions of migrant life [95]. As such, we designed interviews to elicit life histories [129]. We asked participants about their migration, training, and professional experiences living as part of the Chinese diaspora in the United States and their use of social media in everyday life. We refined the interview protocol based on feedback from colleagues, particularly colleagues working at the intersection of migration and HCI. For instance, based on piloting the interview protocol, we added questions related to participants' perceptions of the U.S. and China both before and after coming to the U.S.

Before the interviews, we informed participants about the study's goals and the confidentiality of the study. We then asked for consent to record the interview. We also reminded participants at the beginning and end of the interview that they could request their data to be deleted at any time with no penalty. We conducted all interviews in English, though participants were encouraged to communicate in English or Chinese based on their preferences and comfort. During the interviews, we asked participants about their lives before, during, and after migrating to the U.S. and the role various social media platforms played in their lives during these times. We also asked participants about the role they perceived social media algorithms to play, if any, in their professional and private lives as migrant technology professionals. Finally, we asked participants about their goals and plans for the future. Due to the COVID-19 pandemic, we conducted all interviews over the phone or via Zoom. These interviews lasted 66 to 111 minutes and averaged 89.8 minutes (SD = 28.3).

It is important to note that during the period of our data collection (Spring and Summer of 2021), Asian communities in the U.S. experienced unprecedented racial discrimination and violence

Participant	Social Media Pre-Migration	Social Media During Migration	Social Media Post-Migration
Zihan	1Point3Acres	1Point3Acres	WC, FB
Xinyi	1Point3Acres, Zhihu	1Point3Acres, Zhihu, WC	1Point3Acres, Zhihu, WC, LI, RED
Shiqi	1Point3Acres, LI, YT	1Point3Acres, WC, LI	1Point3Acres, LI
Xue	1Point3Acres, CD, LI	1Point3Acres, WC, CD, Red	1Point3Acres
Zihao	Renren, Twitter, FB, Weibo, Tumblr	Renren, Twitter, FB, Weibo, WC	Twitter, Reddit, WC
Haoxuan	FB, IG, YT, WC, Weibo, Douban	FB, IG, YT, WC, Weibo, Douban	IG, Twitter, YT, WC, 1Point3Acres, Douban
Rui	FB, CD, 1Point3Acres	FB, LI, TikTok, YT, WC, 1Point3Acres	TikTok, WC, 1Point3Acres
Jiaxiang	FB, IG, LI, Pinterest, Reddit, Twitter, YT, WC	IG, LI, Reddit, Clubhouse, TikTok, Twitter, YT, WC, Weibo	IG, LI, Clubhouse, TikTok, Twitter, YT, WC, Weibo
Junjie	FB, IG, LI, Reddit, Clubhouse, Snapchat, YT, WC, 1Point3Acres	FB, IG, LI, Reddit, Clubhouse, YT, WC, Weibo, 1Point3Acres	FB, IG, LI, Reddit, Clubhouse, YT, WC, Weibo, 1Point3Acres
Yilin	FB	FB	FB, IG, LI, Clubhouse, YT, WC, 1Point3Acres
Kaihao	FB, LI, WC, Renren	1Point3Acres	FB, LI, Reddit, YT, WC
Xiaolan	Discord, FB, IG, LI, Pinterest, Reddit, Twitter, YT, WC, Weibo, 1Point3Acres, RED	Discord, FB, IG, LI, Reddit, YT, WC, RED, 1Point3Acres	Discord, IG, LI, Reddit, WC, 1Point3Acres
Fangxue	FB, IG, LI, Reddit, Clubhouse, Twitter, YT, WC, RED, Weibo, CD, 1Point3Acres	FB, IG, LI, Reddit, Clubhouse, Twitter, YT, WC, RED, Weibo, CD, 1Point3Acres	FB, IG, LI, Reddit, Twitter, YT, WC, RED, Weibo, CD, 1Point3Acres
Huayang	N/A	N/A	LI, YT, WC
Jiayi	YT, WC, LI, 1Point3Acres, Levels.fyi, Bilibili	WC, LI, 1Point3Acres, Levels.fyi, Bilibili, Facebook, RED	WC, 1Point3Acres, RED
Zhangyu	BBS	FB, LI, Tumblr, YT, WC, Weibo	LI, Tumblr, YT, Weibo
Cheng	N/A	N/A	FB, LI, YT, WC, 1Point3Acres
Nan	Weibo, Renren, WC, QQ	FB, WC, QQ, LI, 1Point3Acres	WC, YT
Hongxi	QQ, Douban	QQ, Douban	LI, YT, WC
Tao	WC, MITBBS	WC, MITBBS	WC, FB

Table 2. Participants' Self-Reported Social Media Use Before, During, and After Migration to the U.S. | Facebook = FB, Instagram = IG, YouTube = YT, WeChat = WC, ChaseDream = CD, LinkedIn = LI

intensified by COVID-19 and the Trump administration, which initiated the potential WeChat ban [135] and referred to COVID-19 as the "Chinese Virus" [98]. As this was a difficult time for many in the Asian community broadly and the Chinese community specifically, we encouraged participants to participate in ways that were comfortable for them, giving them the option to participate in interviews via phone or by Zoom, with cameras off, by typing into the chat box on Zoom, etc. We also ended the interview by asking if they would like any part of the interview retracted or further anonymized. This geopolitical climate may have informed participants' accounts of social media use and algorithms. We discuss this further when describing limitations in Section 6.

After completing the interview, we compensated participants with a $25 gift card as a token of appreciation. The only identifiable information we collected from participants were their names and email addresses for compensation purposes. Upon sending participants their compensation, we de-identified data for analysis. Data was stored on secure servers at the authors' university.

We conducted data collection and analysis simultaneously to be able to cease data collection upon reaching theoretical saturation. After each interview, we transcribed the interview using the transcription services Otter.ai and Rev.com. We then manually checked each transcription to ensure accuracy and began inductively open coding each transcript in Atlas.ti, a qualitative data analysis software, following procedures outlined by Corbin & Strauss [33]. The codes that our analysis surfaced were largely related to 1) participants' use of social media to meet their unique needs, 2) participants' algorithmic literacy, and 3) how participants perceived social media algorithms to influence their lives as migrant technology professionals. After conducting and open coding 20 interviews, we reached a point of saturation wherein no new themes or insights emerged from our interviews, a consensus made by the research team. We made this decision following definitions and guidelines that suggest that theoretical saturation "refers to the point in data collection when no additional issues or insights emerge from data" [66]. Notably, we focused on theoretical saturation instead of data or code saturation. As such, we determined saturation when we ceased identifying new themes or insights rather than new codes, following suggestions by Hennink et al. [66]. At this point, we ceased inviting eligible screening survey respondents for interviews. Next, we met to discuss the tentative codebook, consolidate redundant codes, and group codes, resulting in a finalized codebook. We then applied the finalized codebook to the entire corpus in the process of axial coding [33].

4 FINDINGS

Our research questions asked how Chinese-born migrant technology professionals use social media to meet their needs and how they perceive the algorithms that underpin these social media platforms (RQ1). We also asked how this population's use of social media and their perceptions of the algorithms underpinning social media platforms inform their lives as migrants, including their mobility-related aspirations and goals (RQ2).

The following subsection describes how participants leveraged social media platforms to meet their unique needs as migrant technology professionals and how they exhibited high levels of algorithmic literacy regarding social media algorithms (RQ1). We then describe participants' perceptions of the negative influences social media algorithms had over their lives and mobility-related aspirations and goals, as well as how they attempted to resist social media algorithms (RQ2).

4.1 Migrant Technology Professionals' Social Media Use and Algorithmic Literacy

Participants revealed that the intersection of their ethnic and racial identities and their identity as technology professionals influenced their unique social support needs. Broadly, these needs can be categorized as emotional and political, though these categories are neither mutually exclusive nor

exhaustive. At times, social media interactions proved useful in helping participants meet these needs.

4.1.1 Social Media's Role in Meeting Social Support Needs. In migrating to the United States for a career in technology, many participants reported experiencing emotional challenges, namely isolation. The sense of isolation in moving to another country for a career in the technology industry was exacerbated by the COVID-19 pandemic. For instance, Zihao, a Software Engineer who came to the U.S. in 2013, reported feeling "*a bit more isolated in the last year especially.*" Stay-at-home orders that emerged during the COVID-19 pandemic relegated many new residents to the U.S. to their homes, unable to successfully cultivate ties with geographically co-located others.

Some participants turned to social media platforms to meet emotional and social connection needs. In light of the pandemic, social media was often participants' sole means by which they could have social interaction by reaching out to family and friends back in China. For example, Nan, a former Data Science Intern who migrated to the U.S. in 2012, noted that:

> *[I] can talk with my family and friends about what's going on here, and they're in China. We have different situations with this pandemic, and they care about me a lot, so we often chat with each other [and] make sure things are okay with each other. And yeah, it really helps to get us connected.*

Social media interactions also helped participants meet their emotional needs with respect to their work experiences. Hongxi, who moved to the U.S. to study computer science in 2008, reported using social media to maintain close connections with his family in China. During the interview process for a software engineer position, Hongxi reported: "*when I'm feeling like I almost cannot handle the stress, I just make a video call [via WeChat] with my parents, and just talk [about] something other than working or interviewing.*" Once participants found jobs, they similarly used social media to cope with day-to-day work stressors, such as Huayang, a senior programmer who has lived in the U.S. for 14 years would still "*just go to the internet to see some funny videos or funny jokes… to make you temporarily forget the frustration or sadness.*" Thus, social media was indispensable in helping participants meet their particular emotional needs as migrant technology professionals.

In addition, participants described particular needs regarding migration, particularly the need to obtain legal immigration status. Cheng, a Software Developer, described the "*time, money, and effort*" involved in the laborious process of seeking legal immigration status after he migrated to the U.S. in 2000. Others relied on their jobs to sponsor them to keep a legal immigration status. While Huayang, a Senior Programmer who migrated to the U.S. in 2008, described being lucky to "*have a good boss who sponsored me,*" he noted that others typically do not fare as well, saying "*some employers may not want to spend that money to help you so sometimes some people have to kind of go to another one, quit that job and go to another job with an employer who is willing to sponsor.*" Thus, the logistical challenges involved in obtaining legal immigration status intersect with participants' identities as technology professionals to inform their unique needs.

Social media thus additionally served as a vital tool that participants used to meet political and legal needs informed by their identities as migrants. Some participants could connect with those who had either previously migrated to the U.S. or had professional experience working with migrants from China. For instance, Jiayi, a female Software Engineer who moved to the U.S. for graduate school in 2015, described WeChat as:

> *A door for me to connect with all of my friends, no matter [if] they're here or back in China...And because they're all Chinese people, they always share info with each other...I think other social media websites like LinkedIn or Facebook cannot give us a lot of places to share our stories or feelings, especially as migrants.*

Beyond speaking with family and friends, social media such as WeChat served as a space where immigration professionals shared informational resources. Jiayi described that "*there are some official accounts or the lawyer's accounts. They're sharing a lot of knowledge about how you can get [a] work visa in the quickest way.*" Platforms like WeChat provided opportunities for direct interactions and resource-seeking that helped participants meet unique needs informed by their identities as migrant technology professionals.

This form of support was particularly important as participants noted that U.S.-born co-workers did not serve as sources of support because "*they are not aware how complicated the immigration laws can be in the US*," according to Tao. Chinese social media platforms, in particular, played a large role in participants' everyday lives, keeping them connected to their home networks and information about China while informing them about how best to adapt to life and work in the United States.

In conclusion, participants used social media to meet emotional, political, and legal needs informed by their migrant identity. This finding highlights the significant role that social media platforms from both China and the U.S. play in the lives of highly educated migrant technology professionals. Given the integral nature of social media platforms for social capital formation and connectedness in overcoming emotional and political challenges tied to participants' migrant programmer identities, the perceived impact of the recommendation algorithms that underpin these platforms takes on heightened significance. As we discuss in the next several sections, participants possessed algorithmic literacy and were active users of social media but did not feel empowered to meaningfully resist the perceived negative impacts that social media algorithms had on their lives, particularly concerning mobility-related aspirations and goals.

4.1.2 Migrant Technology Professionals' Algorithmic Literacy. In this subsection, we document participants' professional experience with algorithms and their algorithmic literacy vis-a-vis algorithms underpinning social media platforms. We show that participants in our study possess strong technical skills and high degrees of algorithmic literacy. Theoretically, this could uniquely position participants to enact greater agency over social media algorithms' role in their lives and resist algorithms if desired. We return to this possibility in Section 4.3.

Participants in our study were well-educated in STEM programs such as computer science, data science, and mathematics and conveyed high levels of coding proficiency and algorithmic literacy. Among 20 participants, 16 completed graduate degrees in computer science, data science, or information science-related fields (See Table 1 for additional information on participants' educational attainment). Additionally, 11 participants are Software Engineers or Machine Learning Engineers, and five are working or have worked as Data Scientists. Several have full-time working experience in technical roles at prominent American technology companies, including Microsoft, Amazon, and Google. Participants reported that their education and training equipped them with a solid knowledge base and skill set to work as programming professionals. For example, Xiaolan's training in computational science and statistics helped her better understand how algorithms work and also helped her learn several coding languages, including R, Python, C, and C++. She added: "*I know R pretty excellent; I even wrote a package for a class project.*" She shared her training experience:

> *My school education is mostly on the theoretical side, pretty mathy. For example, write, create, and design yourself or write matrix reduction yourself... I think [my] schoolwork set a pretty good background, [a] pretty good foundation for learning more on the job...[and] apply[ing] [skills] to a job.*

Many participants reported that when they sought programming positions, they needed to answer various algorithm-related questions and demonstrate high proficiency in developing algorithms. The

job-seeking process, especially preparing for one's first job, is another time participants developed their coding skills. Software Engineer Yilin, who came to the U.S. in 2004, shared his experience:

> *The second stage [where] I learned a lot about coding was probably before preparing for job hunting in the United States...I failed a couple of interviews in job hunting. [Then] I realized I really need to work on some LeetCode problems, trying to pick up coding skills required specifically by those companies. So I went to the LeetCode website and spent maybe one or two months on it and landed an offer.*

Platforms like LeetCode are designed to help coding professionals enhance their technical skills, especially in solving algorithm problems for technical interviews. Yilin, who leads a team building infrastructure for a prominent American technology company to train the latest machine learning models, recalled that in preparing for technical interviews, he tackled and completed around 250 to 300 problems: "*[For] each problem I cover like five times...That's my LeetCode skill. [With] all these skills, I pretty much pass all the interviews.*" Participants who faced language barriers also relied on Chinese-designed platforms to improve their algorithmic skills. Jiayi, who focused on software engineering throughout her master's degree, shared her observations:

> *Most people are using LeetCode to do algorithm problems. But I know that there is one created by Chinese people called LintCode. I used LeetCode most of the time because it has more questions and more algorithms. But some of my friends use LintCode a lot because it has Chinese translations for errors and problems, so it's easier for them to understand, especially for people who are not proficient in English.*

Most participants reported that as technology professionals, they must apply their skills to their respective projects and keep improving their programming and algorithm skills after landing their new jobs. Kaihao, who studied electrical engineering during undergrad and came to the U.S. in 2016 to study robotics in graduate school, shared his experience developing algorithms for a well-known self-driving car company:

> *I work on planning algorithms which is like, given perfect perception - like we know in our surroundings perfectly. We know where are other cars, where are other people, where they are in our lane on the road - how do we plan to drive forward?*

Kaihao's work with planning algorithms for autonomous vehicles reveals his ability to leverage his algorithmic literacy in high-stakes domains. Additionally, Huayang, a Senior Programmer who has extensive coding experience in languages like Oracle SQL, Java, and C++ and who came to the U.S. in 2008, shared his expertise about some of the mechanisms of algorithmic-driven recommendation systems on social media.

> *I'm a programmer. I know those tricks, how YouTube and Douyin know your habits or know your interests...I mean, there are tricks, like those video websites slowly start to know your interests, know your habits, know what you'd like to see on their website, what kind of video you like so they can use their algorithm, remember you, your activity, what kind of things you are watching. So, the algorithm remembers you. The next time you open their webpage again, you will see similar videos at the top.*

Huayang's explanation of how recommendation systems work demonstrates that he can understand and leverage his professional algorithmic expertise in everyday life vis-a-vis social media algorithms. According to most participants, their training and professional experience with algorithms not only equipped them with high algorithmic literacy but also made them more aware of the application and the real-world impact of social media algorithms. Thus, our findings show that participants are highly educated and have strong technical skills. Importantly, they possess high degrees of algorithmic literacy.

4.2 Perceived Role of Social Media Algorithms in Diasporic Life

In the last section, we demonstrated how participants used social media platforms to address their unique needs and how they possess strong technical skills and are highly algorithmic literate. In this section, we examine how participants perceived that social media algorithms impacted their careers by exposing them to concepts and skills necessary for advancement in the technology field. Moreover, they perceived that algorithms played an important, often negative, role in shaping the kinds of content they accessed on social media, which carried implications for future mobility-related aspirations and goals.

4.2.1 Social Media Algorithms Supported Career Development. When participants intended to use social media to support professional development via learning new skills and concepts related to programming, they found content recommendation algorithms on platforms like YouTube helpful. For instance, Hongxi, a Software Engineer who has relied on social media like QQ, YouTube, and LinkedIn for support since his migration to the U.S. in 2008, described his experience with YouTube, saying:

> *Most of the time, [when] I watch YouTube videos, it's not for fun; It's just for some knowledge that I want to learn...I just keep clicking the link; after I finish the title I watch, I will click another one...I learn a lot from the recommendation system.*

While YouTube is helpful as a platform in that it hosts a vast amount of educational content related to programming, Hongxi perceived the recommendation algorithm, in particular, to be helpful as it allowed him to discover and aggregate informational resources.

Similarly, Huayang, a Senior Programmer and regular user of YouTube, LinkedIn, and WeChat who migrated to the U.S. in 2008, said:

> *Those algorithms do help. Because it does not always give you exactly the same thing...They [programmer content creators] post their lessons online on YouTube...So you can just watch some of them, so just enhance your scale and broaden your view.*

Huayang perceived that recommendation algorithms on platforms like YouTube facilitated career development by exposing him to the knowledge and skills necessary for a successful programming career.

4.2.2 Social Media Algorithms Influenced Participants' Mobility-related Aspirations and Goals. While participants tended to laud social media content recommendation algorithms for helping them discover informational resources related to their programming careers, they were less satisfied with how they perceived recommendation algorithms to influence political matters. Namely, in relying on social media platforms to gain information about the state of the U.S. and China and meet their informational needs, they found the phenomena of filter bubbles [57] and echo chambers [53] troubling in two ways: 1) it led them to doubt their own perceptions of U.S. and China, and 2) it made them question their own mobility-related aspirations and goals.

Many participants, directly or indirectly, referred to the related concepts of filter bubbles and echo chambers as they pertained to their social media use. For instance, Junjie, a Data Scientist who has been living in the U.S. for a decade and uses a variety of Chinese and U.S. social media, noted:

> *I spend a lot of time on YouTube, just all kinds of videos, but as you spend more time on YouTube, you tend to narrow your bubble. So you're living in your own world because YouTube algorithms just enforce the same content on you over and over.*

Junjie recognized the existence of filter bubbles in his social media News Feed and alluded to the potential consequences of these filter bubbles in leading him to a personalized perception of the political climate that may not match external reality. Additionally, Jiaxiang, who worked as a

Software Engineer in a prominent American technology company and currently serves as a chief technology officer for a startup, made reference to the filter bubble-like impact of recommendation algorithms, noting:

> *I started to realize the recommendation algorithm is playing the devil. It sets people apart; people with similar opinions will be grouped [and] clustered. That's why they call it a machine-learning algorithm. It's a clustering algorithm... And then, that's where conflict gets started. And people believe what they want to believe, not what actually happened. And people start having enemies [rather] than friends after [the] recommendation algorithm. That's what I don't like.*

Additionally, the filter bubbles that participants felt plagued their social media engagement also influenced their views on the U.S. and China. Due to the COVID-19 pandemic, participants increasingly relied on algorithmically curated social media content for social connection and informational needs. Participants' perceptions were largely in flux based on the algorithm's recommended content. For instance, Data Scientist Junjie struggled with isolation and could not physically visit China due to COVID-19 lockdowns and regulations. He heavily relied on algorithmically curated social media content to form perceptions about life in both countries. He elaborated:

> *I think it depends on the content that social media is recommending for you. I think when I see a lot of negative things being promoted, then I feel like this country [U.S.] is hopeless, but on the other hand, there [are] a lot of good things happening in this world too. Then I feel that it is a great place. I think sometimes I'm constantly in this dilemma. I don't know what's going on. Is this a great place or [a] shitty place? I don't really know.*

Junjie's quote demonstrates how social media enacts different (perceived) realities for participants. Junjie's perceived reality influenced his mobility-related aspirations and goals, namely the decision about whether or not to return to China to live and work. Junjie also spoke about the differences in his own perceived reality when navigating social media versus face-to-face contexts, saying:

> *I do feel like if you go out to the real world, 99.9% of things are good. Only the bad is a minority, but if you go on the internet, the minorities are getting magnified because of the algorithms. Yeah, on the internet, if you're not careful, you will think this is a terrible place. But if I really go a step out, go to the real world, [and] interact with people, it's just as peaceful as it can be.*

This quote also speaks to how perceptions formed via algorithmically curated social media content do not necessarily match the realities individuals perceive in face-to-face contexts. Importantly, though, social media recommendations play a sizable role in mobility-related decision-making, as Junjie notes when he says that his recommended content on YouTube "*will help in terms of shaping my decision.*"

Participants perceived that recommendation algorithms produced filter bubbles that, in turn, influenced their perceptions of the U.S. and China. As such, many participants described feeling uncertain about where they would like to end up living and working given the state of the world as conveyed through the social media content they consumed. Participants described how they felt social media recommendation algorithms could lead them to perceive that the U.S. was not a good place for them to live and work, partly because of safety issues. Software Engineer Hongxi, who reported currently using LinkedIn, WeChat, and YouTube frequently, was particularly worried about the amount of content about gun violence and COVID-19 in the U.S. that he consumed on social media, saying:

> *So then we have a lot of violent news, especially the mass shooting news everywhere. I think it's almost every day we have two or three mass shooting news. And that makes me*

> *feel [an] almost very negative feeling of the US. I have kids. I start worrying about [their] safety...And then, COVID-19, and just seeing the two different approaches to control the disease. I think I probably want to back [to] China in the future.*

This quote speaks to how participants perceived news consumption via algorithmically curated social media to influence their political perceptions and shape migration aspirations and goals, directly impacting their mobilities.

However, other participants expressed more ambivalence about their mobility aspirations and goals based on the mixed representation of both the U.S. and China within their social media ecosystems, specifically via content shared by friends that are algorithmically ranked within their feeds. For example, Jiayi, a female Software Engineer, shared her experience with WeChat, saying:

> *In WeChat, you can see mixed posts from different people. For people who live in the United States, which are half of my friends in WeChat, they are sharing news about the United States and articles about the opportunities in Seattle. They will say, "Hey, I live in Seattle. I really like the city. And I think the industry is growing." Or "I'll move to Silicon Valley in a few years." But the other half of my friends are still in China. They will share what it looked like today. The photos or how the policy will impact Chinese growth. There are other Chinese big-name companies like Alibaba and TikTok. There are a lot of other [technology] companies. But they're also growing really well. I think that can give me a rough understanding of how China has been developing recently. If there are opportunities that fit into my interest and future career plan, I think I'll come back to China, definitely. Because it's developing faster.*

Here, Jiayi demonstrates how algorithmically ranked content on WeChat informs her perceptions of the U.S. and China, specifically regarding the development of their respective technology industries, which in turn informs her mobility aspirations and goals.

Finally, it is worth noting that social media algorithms and filter bubbles did not just impact participants' mobility-related aspirations and goals *after* migrating to the U.S. For some, the very decision about whether to migrate to the U.S. in the first place was partly informed by content on social media that was delivered and/or ranked algorithmically. As Haoxuan notes,

> *Back then, I followed a lot of online celebrities who had strong opinions on the Chinese Government and American government, so they would kind of say pretty extreme stuff like "Chinese Government is so terrible" and "we should all immigrate to other countries to flee from this terrible government," stuff like that. And that kind of gave me an impression that everything is better in the US or other countries... and people will... kind of give the impression that it's very urgent and we should move to some other places quickly. And I was influenced by that kind of thoughts pretty strongly back then.*

Haoxuan's quote also demonstrates how social media content mediated by algorithms enacts different realities about China and the U.S. for him back then, and such perceived reality partly influenced his decision to leave China and migrate to the U.S. Thus, the interplay between social media algorithms and the geo-political landscape regarding the relationship between the U.S. and China informed participants' mobility aspirations and goals at multiple points in their migration journeys.

4.3 Migrant Technology Professionals' Attempts at Algorithmic Resistance

Despite participants' high levels of algorithmic literacy discussed in section 4.1.2, participants described how they felt unable to resist the hold they perceived social media recommendation algorithms to have over their lives and mobility-related aspirations and goals. When attempting to resist algorithms, participants primarily engaged in surface-level strategies, such as platform and

content diversification or platform non-use, or passively coped with the influence of algorithms, consistent with the strategies used by laypersons with lower algorithmic literacy [46, 51, 74, 76].

One main mechanism by which participants attempted to resist the impact of algorithms on their mobility aspirations and goals was via *content and platform diversification*. Content and platform diversification were particularly relevant when participants engaged with the kind of global news that could influence their perceptions of the world and possible futures. For instance, Data Scientist Junjie, who uses social media platforms like Facebook, Instagram, Reddit, Weibo, and WeChat for news, reported engaging with a variety of global news sources online:

> *I do feel like politically [the algorithm] does throw you in this bubble. So personally, I would alternate between different channels to balance my political views. So I would switch between CNN and Fox News to get a balanced view of things and also rely on foreign media, for example, Russian Times or there is one from Saudi Arabia. And then CAN, it's a publisher from Singapore, and also CGTN, which is our Chinese state-funded broadcasting agency available on YouTube. So I think for that aspect, I'm just trying to see as much as possible to not rely on a single source.*

Participants reported diversifying both the content they consumed and the platforms on which they consumed it as a way to make more informed decisions as migrants. Jiaxiang, who consumes news content from platforms including Instagram, TikTok, Twitter, Weibo, and WeChat, also advocated for such strategies while acknowledging the pervasiveness of recommendation systems:

> *I'm super concerned about it; I think people fall in love with their own beliefs. Most people wouldn't want to recognize there are different thoughts and different opinions somewhere else, sometimes, including myself...I try to diversify my source of information. Try to be as critical thinking as possible. But still, recommendation algorithms are immersive.*

Like Junjie and Jiaxiang, most participants perceived negative implications of consuming algorithmically mediated content. Zhangyu, a Software Engineer who came to the U.S. in 2003 and used LinkedIn, Tumblr, Weibo, and YouTube, also noted: "*I think [the algorithm] is preventing me from getting a different point of view, especially now. If you're clicking on something, I think now the algorithm is trying to enforce one side's point of view.*" However, they all expressed a sense of powerlessness regarding limiting its negative impact upon them.

In addition to the diversification of content and platforms, participants also chose to *stop using* or *abandon* platforms whose recommendation algorithms burdened them. For instance, Xiaolan, a female Data Scientist, uses or used sites including Instagram, Red, LinkedIn, Reddit, YouTube, and WeChat. She noted her conscious non-use of algorithmic-driven platforms like TikTok and Red:

> *I don't really have a habit of scrolling Tiktok or Red. It's just something I'm trying not to do. I think I'm quite weak to fight against those things... So I say I feel I'm consciously not using Red or Tiktok for this reason.*

While Xiaolan posited that her non-use of platforms whose recommendation algorithms were particularly prominent was deliberate and conscious, other participants considered non-use because they felt they had few other options to resist the hold of social media algorithms. For instance, Junjie, who had previously been an active user of social media including Facebook, YouTube, and RED, elaborated on his decision to stop using these algorithmically driven platforms:

> *There's nothing much you can do. Either accept it or just use social media knowing there is a recommendation system there. Take some caution, or just don't spend much time on it. Limit your time on the internet because there's really nothing you can do to change the recommendation system. I'm afraid there's nothing you can do except don't use it. You just walk away from it.*

Junjie's description of non-use insinuates that non-use is the only way for him to resist, despite his high levels of algorithmic literacy as a data scientist. For Junjie, bypassing algorithms via platform use is futile, and only complete platform abandonment would remove the negative impacts he perceives algorithms have over his life.

Participants' unique backgrounds give them the ability to critically evaluate the impact of algorithms, but they nevertheless unanimously did not feel empowered to resist them. Hongxi, a software engineer who has been living in the U.S. since 2008 and is an active user of LinkedIn, YouTube, and WeChat, pointed out that due to the mediation of algorithms, a lot of online content previously visible is rendered invisible:

> *I don't know what kind of story that's not showing...because we all always have a social bias based on what we read and what we learn. So I think the algorithm's going to have some influence on the views that I have on this country.*

Hongxi's response highlights that he fully understands how algorithmic-mediated content works in tandem with a preexisting bias to impact his thoughts and mobility-related aspirations and goals.

Junjie, who works closely with recommendation systems, explained the mechanisms regarding how algorithms work but also expressed his sense of powerlessness while interacting with them:

> *I work directly with a recommendation system because I'm a data science professional. I know that the more you click, the more similar content you're going to see, [and] the more you're going to live in a smaller and smaller bubble. For me, it really is just [that] you have to reach out [and] expand your horizons.*

In sum, this section shows having knowledge and awareness of algorithms (i.e., algorithmic literacy) does not diminish the impact participants perceived algorithms having on their everyday lives and mobility-related aspirations and goals, nor does it necessarily equip them with effective means to resist these perceived impacts. Our results illuminate how the promises of algorithmic literacy may be unrealized, and this has high-stakes implications, which we return to in Section 5.1.

5 DISCUSSION

Through interviews with Chinese migrant technology professionals with high levels of algorithmic literacy, we found the following:

- Both Chinese and U.S. social media platforms were useful for migrants in helping them adjust to their host country while maintaining ties with their home country.
- Participants revealed high levels of algorithmic literacy stemming from their educational backgrounds and work as technology professionals with extensive programming experience.
- Participants perceived social media algorithms as helpful in supporting career development.
- Participants perceived social media algorithms as harmful with respect to their mobility aspirations and goals.
- Despite their algorithmic literacy, participants described being largely unable to resist the perceived negative impact of social media algorithms on their mobility aspirations and goals.

This section elaborates on our findings' implications. First, we question the promise of algorithmic literacy by drawing from our findings on the importance of social media for participants combined with their algorithmic literacy and feelings of disempowerment in resisting social media algorithms. We contend that algorithmic awareness or literacy does not *necessarily* translate into meaningful forms of algorithmic resistance. Second, we contribute to a human-centered conceptualization of "algorithmic mobility" and discuss its broader implications in and beyond migration contexts. Finally, building on prior work, we lay out design recommendations for algorithmic mobility and algorithmic resistance.

5.1 Challenging the Promise of Algorithmic Literacy

First, we contribute to theorizing around "algorithmic literacy" by challenging the notion that algorithmic literacy can facilitate greater capacity for meaningful algorithmic resistance. Scholars often invoke the term "algorithmic literacy" when suggesting ways to redress the harms associated with algorithmic bias [80, 124]. Proponents suggest that algorithmic literacy can be a way to imbue humans who are directly impacted by algorithmic systems with the agency to effectively combat these systems and gain "algorithmic sovereignty," or exclusive control over one's algorithmic life [99]. Similarly, some scholars suggest that a "critical consciousness" of algorithms may help individuals combat algorithmic power or the force that algorithms exert when they influence decision-making across domains and how we relate to each other and ourselves [35].

The participants we interviewed were hyper-selected migrant technology professionals with great awareness and understanding of algorithms. Thus, they possess technical knowledge of the design and functionality of algorithms [35]. Cotter & Reisdorf [34] note that algorithms are "experience technologies" more easily understood through use. Participants' professional experiences developing and iterating on algorithms in myriad contexts positioned them as highly algorithmically literate, as Findings Section 4.1.2 demonstrates. Moreover, participants benefited from both technical expertise and experience as well as the practical experiences with and phenomenological knowledge [35] of algorithms they gained when using social media platforms to navigate their experiences migrating to the U.S.

Yet, even these migrant technology professionals found it difficult to effectively resist the negative influences they perceived social media algorithms to have over the kinds of content they consumed and how it influenced their lives. Additionally, they demonstrated that their perceptions of the impact of algorithms on them and the way they responded to these perceived negative impacts were highly similar to those of laypersons despite their greater degrees of algorithmic awareness and literacy. For example, Jhaver et al.'s [74] study of Airbnb hosts who "did not understand exactly how search works" on the platform found that these hosts engaged in a "double negotiation" in their interactions with Airbnb as they navigated anxiety and uncertainty both around appealing to potential guests and navigating the Airbnb search algorithm. In response to the anxieties and uncertainties created and exacerbated by algorithms, Airbnb hosts engaged in myriad strategies, from passive acceptance to attempts to reverse-engineer the algorithm. Our findings demonstrate that the hyper-selected Chinese-born migrant technology professionals, who held higher degrees of algorithmic literacy, engaged in similar strategies when attempting to intervene in and/or resist algorithms' perceived negative impacts on their social media consumption and their lives. Thus, algorithmic literacy did not *necessarily* enable more effective means of algorithmic resistance.

Algorithmic resistance is thought of as "intentional behaviors to produce algorithmic outcomes different from what would otherwise be produced" [76]. Ettlinger [52] differentiates productive resistance or resistance strategies that produce new elements of the digital environment and resistance via avoidance, disruption, or obfuscation. Participants in our study demonstrate similar "resistance" strategies to those identified in prior work on laypersons, noting that they avoid interfacing with algorithms (akin to algorithmic aversion described in [47, 87]). Yet, many also note that they passively accept the use and impacts of algorithms. Importantly, while the avoidance approach, or non-use of algorithmically-driven social media platforms, could be an option for some hyper-selected migrants, participants in our study described the need to use social media to confront unique challenges related to their migrant programmer identities (see Findings Section 4.1.1). As such, the non-use of algorithmically-driven social media platforms comes with a cost by requiring migrant programmers to engage in other workarounds to seek identity-relevant information and manage unique uncertainties.

Past work argues that algorithmic awareness can have behavioral influences, encouraging social media users to think critically and make decisions about their social media use [51, 134], and lack of awareness can facilitate increased susceptibility to the negative impacts of algorithms [134]. Other work suggests that algorithmic literacy is key to "algorithmic sovereignty," or the ability to exclusively control one's algorithmic life [99]. We challenge these assertions, questioning how technical and/or practical understandings of algorithms facilitate impactful behavioral outcomes, namely meaningful resistance. Other prior work notes that awareness of algorithms is closely related to perceived autonomy [49]. Again, our findings refute this claim, as keen awareness and understanding of algorithms did not translate to Chinese-born migrant technology professionals feeling autonomy over the algorithms they relied on to deliver social media content relevant to their lives as migrant technology professionals. Our findings align with those of Cotter & Residorf [34], who acknowledge that "algorithmic knowledge does not supplant critical thinking skills or information literacy. Possessing some knowledge of algorithms does not entail its effective mobilization in assessing and making sense of information in context". Additionally, our findings align with Cotter's [35] claim that critical algorithmic literacy does not necessarily mean that those who possess such literacy will have effective means of dismantling algorithmic systems and that algorithmic literacy alone cannot facilitate the enactment of systemic change. Yet we extend Cotter's findings by highlighting how the inability to translate algorithmic literacy to effective algorithmic resistance impacts migrants' lives, particularly their mobility-related aspirations and goals.

5.2 Conceptualizing Human-Centered Algorithmic Mobility in HCI

Second, we contribute to HCI theory by considering how Cresswell's concept of algorithmic mobility applies to and can be extended in HCI [1], bringing in scholarship around algorithmic management [56, 100, 130] and algorithmic identity (e.g., [18, 29, 76, 112]). More specifically, we map out four dimensions of algorithmic mobility in HCI and discuss its broader implications.

Mobility is a ubiquitous construct for which it is difficult to pinpoint a unifying definition. For British geographer Tim Cresswell, the basic signifier of mobility is "getting from point A to point B," which he further defines as the entanglement of movement, representation, and practice [37]. Cresswell's conceptualization of mobility concerns both mobile physical bodies and represented mobilities. In early HCI scholarship, research perspectives on mobility also tended to be narrowly defined, "exclusively in terms of humans' independency from geographical constraints," as Kakihara and Sørensen point out [75]. They, therefore, expanded the notion of mobility by arguing that being mobile is not just about individuals traveling but human interaction. Weilenmann and Juhlin later argued that mobility had not been receiving enough attention in HCI and suggested that HCI and social science research and specifically the "new mobilities" paradigm could benefit from being in better conversation with each other [128], as "mobile information technologies do not just operate in space, but they are tools that serve to structure the spaces through which they move" [23]. In our paper, we approach mobility as a sociotechnical construct. Participants in our study physically moved from China to the U.S. Importantly, their mobility-related aspirations and goals were/are mediated by social media and the algorithms that underpin them (please refer to Findings Section 4.2.2), as well as ongoing geopolitical tensions. For the purpose of this work and to reflect the sociotechnical nature of mobility, we adapt definitions of mobility from canonical works from mobility studies [37] and HCI [75] to propose a human-centered definition of algorithmic mobility as *socially and algorithmically produced motion that concerns the movement of physical bodies and interactions as well asassociated digital movement.* That is, mobility is not only concerned with how movement is formed, practiced, mediated, and regulated physically and digitally. It is also concerned with how existing social and cultural dynamics influence the emergence of new mobilities in the

digital age. This definition is particularly illuminative given contemporary mobilities' increasingly algorithmically mediated nature [28].

In the context of COVID-19, where contact tracing has become prevalent, geographer Tim Cresswell coined the term "algorithmic mobility" to refer to the encoded measurement of mobilities, which include algorithms for tracking, tracing, and assigning "risk scores" to contain the spread of the virus [1]. He observed that algorithms have begun to link with everyday physical borders, such as the use of QR codes entering and exiting restaurants or airports. As digital platforms become more and more critical in people's everyday life, the ubiquity of platforms has also given rise to what is being called "platform capitalism" [118]. Algorithms have started to exert power and control over people's (in particular, workers') routines and experiences in problematic ways [130], largely to maximize productivity and profits. One common feature of platform governance is *algorithmic management* that regulates workers and their movement, where software algorithms "assume managerial functions and surrounding institutional devices that support algorithms in practice" [84]. For example, Griesbach et al. [56] found that food delivery platforms such as Instacart constrain workers' freedoms and mobilities by regulating their time and activities, which they call "algorithmic despotism." Similarly, ride-hailing platforms such as Uber use algorithms to manage drivers' mobilities directly, affecting workers' livelihoods [100]. Moreover, for laborers whose work directly improves algorithmic systems or empowers machine intelligence, their movements could be purposefully rendered algorithmic. In other words, regarding search engine optimization, Meisner et al. [88] have found that the workers doing "human checks" adopt a "mechanical identity" based on "very algorithmic logics — of automation, efficiency, and aggregation".

Scholarship on algorithmic identity explores the interplay between users' identities, the interpretation of data, and the algorithmic processes of platforms [18, 29, 76, 112]. Digital Studies scholar Cheney-Lippold [29] has developed concepts such as "measurable types" to illustrate key mechanisms in forming algorithmic identities. Measurable types are the "interpretations of data that stand in as digital containers of categorical meaning." For example, on-demand platforms can use individuals' trace data to create categories that can be measured, such as "white," "Black," "Asian," "newbie," and "skilled worker." Algorithmic identity is often fluid and dynamic as it changes with new data added to existing models [29]. Such algorithmic identities are often used as inputs for recommendation or algorithmic decision-making systems, which can materially impact people's everyday lives. For example, algorithmic identities could impact not only people's self-conception [18, 76] but also their mobility-related aspirations and goals, such as when and where to (or not to) move.

Building on Cresswell's conception of algorithmic mobility [1] as well as previous scholarship around algorithmic management [56, 84, 100] and algorithmic identity [29, 76, 88], we extend the notion of algorithmic mobility to HCI. By synthesizing prior work in HCI and related fields, we call for a human-centered conceptualization of algorithmic mobility. We also argue that algorithmic mobility has multiple dimensions, including but not limited to 1) *algorithms used for tracking and digital bordering*, 2) *algorithms mediated by digital platforms that directly manage or otherwise impact users' movements*, and 3) *the logic of algorithmic systems that renders users', especially laborers', movements algorithmic.*

Our findings illuminate how algorithmically mediated social media content is perceived as necessary for approaching and overcoming unique identity-related challenges but nevertheless impacts migrants' critical migratory and mobility-related goals and aspirations. Participants reported how content accessed via social media influences their external realities, such as their perception of the U.S. and China, therefore influencing their thoughts, such as where they end up living and working. Importantly, our findings illuminate a novel fourth dimension of algorithmic mobility. That is, 4) *algorithmically curated content on social media and elsewhere based on facets of users'*

identities directly influences users' mobility-related aspirations and goals, such as how, when, and where they go.

Scholars in mobility studies have long pointed out that mobility is inherently political and "a resource that is differentially accessed" [2, 38]. The politics of mobility is imbued with racial, gender, and class politics, which reflect existing social hierarchies and reinforce societal inequalities and differences [2]. Our findings around algorithmic mobility illuminate that politics of mobility not only exist physically but also permeate digital terrains and are mediated by the politics of technology design. For example, scholars have pointed out that the capitalistic design logic of the "captivating algorithm" [107] requires users' constant engagement.

A human-centered conceptualization of algorithmic mobility has broader implications for HCI and CSCW. As Geographer Peter Adey pointed out, "mobility shapes life changes" [2]. In our research context, exacerbated by COVID-19, participants reported that their everyday consumption of algorithmically mediated content influenced their goals and aspirations about where they move and settle. Mobility-related sense-making processes mediated by algorithms may also apply to other marginalized populations. For instance, after the U.S. Supreme Court's recent decision to overturn Roe v. Wade and end a constitutional right to abortion, social media played a critical role in disseminating resources for abortion access. These resources included how individuals could more safely travel across the United States to receive abortions, which involves mobility-related decisions [14].

Understanding the mechanisms of algorithmic mobility has high-stakes implications. Indeed, how algorithms directly and indirectly impact users' mobility-related goals or aspirations has a range of implications, ranging from people's access to jobs, food, and health care, especially among residents of low-resource communities. For instance, HCI scholars argue that there is a need for new, computing-enabled, shared transportation models to address transportation-related access to health-enhancing resources [48]. Examining how mobilities are mediated algorithmically and experienced differentially among people of different races and socioeconomic statuses could help scholars expand their understanding of the uneven distribution of power and inform timely interventions.

5.3 Design Recommendations for Algorithmic Mobility and Algorithmic Resistance

Our findings contribute to theory by highlighting the high stakes of algorithmic mobility and that algorithmic literacy does not necessarily straightforwardly promote algorithmic agency or effective resistance strategies. In this section, we draw from these findings to surface design recommendations that may promote greater algorithmic awareness/literacy *and* more meaningful mechanisms for enacting agency or resistance over one's (algorithmic) life. We do not intend these design recommendations to be treated as "cure-alls" for systemic problems of racism and xenophobia or longstanding geopolitical tensions. Rather, we draw from our findings to suggest that design may play *a* role – not *the* role – in fostering more meaningful algorithmic literacy and resistance. Finally, given that migrants like those in this study are simultaneously subject to algorithms from both the U.S. and China, it is critical that we propose policy interventions on an international scale. We suggest nations such as the U.S. and China attempt to find mutual ground in designing and regulating algorithms to maximize benefits for people on the move, such as transnational migrants.

First, we highlight how design recommendations around content moderation may affect algorithmic mobility and algorithmic agency. Content moderation may be particularly relevant for migrants using social media to stay up-to-date with current events in the U.S. and China, as the landscape of political content on social media is rife with misinformation, and content moderation is often leveraged as a way to combat political misinformation online. Additionally, content moderation

is often, though not always, viewed through the lens of content removal or account suspension [54]. Yet, scholars have revealed how marginalized communities often disproportionately bear the brunt of content removal strategies [62], which may further their isolation and even limit access to work opportunities [22]. Thus, scholars increasingly turn to other mechanisms, such as content suppression (or reduced visibility of content) [54] and content warnings [61], as examples of important moderation strategies. Content warnings allow people to customize their experience with algorithmically-driven content consumption by "deciding which types of content they do and do not want to see" [61].

In the migration context, content suppression and warnings may be particularly useful because the types of mobility-related social media content participants consume daily directly influence their external realities, particularly perceptions of the U.S. and China. For example, many participants described feeling uncertain about where they would like to live and work. Because prior work has demonstrated that content warnings can be particularly beneficial to community-specific social media platforms (e.g., platforms designed for transgender users [61]) and are broadly supported by users [119], they may similarly benefit the Chinese-born migrant technology professional community. Yet, our population is faced with making decisions about their own mobility – in this case, how should content warnings work on social media?

We argue that social media platforms can institute content warnings similar to those used to contextualize biased information or misinformation on social media (e.g., [115, 116]). For instance, information about current geopolitical events, which participants referenced as being influential to their mobility-related aspirations and goals, could be contextualized with a content warning or label. Such warnings or labels could note that this piece of content may provide only a partial view, and encourage social media users to seek additional or diverse sources. Other forms of "behavioral nudges" could also be implemented within social media platforms to redirect users' attention away from potentially false content [19, 73]. Moreover, given that migrants' mobility-related aspirations and goals may be particularly intimately shaped by political content about the U.S. and China consumed via social media, another design approach to combat misinformation could be "topic-aware misinformation warnings" [131] in which users' preferences for warning designs can vary based on topics. In the migration context, this could include being able to set preferences specifically around geo-political news, which was relevant to participants as they weighed the possibility of returning to China in the future. Finally, a combination of algorithmic and social approaches such as (potentially crowdsourced) fact-checking or content labeling and emotional appeals to misinformation correction [21, 72] could be beneficial to migrants, as algorithmic approaches could provide misinformation warnings at scale while social approaches could leverage the trust and affiliation of migrant communities online.

We also note how content moderation tactics, including content warnings and flagging, may constitute a necessary but insufficient precondition for effective algorithmic agency or resistance. Thus, we now turn to design recommendations that may more concretely enable users of social media platforms to exert control over the algorithms that shape the content they consume and the connections they make on social media platforms. We echo Andalibi's [10] call for human-centered news feeds, or news feeds that pay attention to factors like topics and time when determining what content to recommend and to whom. In our context, users can set up which topics they would like to see more or less about and at which times. For instance, participants referenced feeling positive about social media platforms' recommendations of career advice or skill-building opportunities. Still, they felt more negatively about political content related to the state of the U.S. or China. Chinese-born migrant technology professionals can leverage human-centered news feeds to potentially encourage the delivery of professional content recommendations while stifling the delivery of political content, at least during times that may be challenging for participants.

Algorithmic recommendation systems have already experimented with using contextual factors like physiological cues to shape content recommendation [5], so we anticipate that strategies that help return agency to the user over what kinds of content they see may be promising avenues for future research and design.

Additionally, aligned with Alvarado & Waern's [7] work on Algorithmic Experience (AX), we note that design recommendations can facilitate greater "algorithmic user-control," or "the capabilities that the user is given towards directly controlling the algorithm." For one, the ability to toggle algorithmic curation of one's news feed and/or recommended content should be present, easy to find, and clearly labeled. Facebook lets users switch between "Top News" and "Most Recent" when viewing their news feed. However, the visual cue that this is a possibility is small and not figured prominently on the news feed, nor is it clear that "Top News" refers to algorithmically curated content. Other platforms, like TikTok and Red (Xiaohongshu), offer little to no opportunities for algorithmic control as the dominant means of consuming content is through algorithmic curation, and there are no clear options for sorting one's feed by recency or topic.

Moreover, we argue that designing for contestability [69] could be important for algorithmic agency and resistance opportunities in the context of Chinese-born migrant technology professionals. Systems designed for contestability allow users to "shape and influence decision-making processes" and support iteration on the process [69]. Providing this is important in principle because it supports the co-construction of decisions. In the context of social media algorithms, designing for contestability can align with *algorithmic experience* (AX) in that users of social media platforms can be given more and clearer opportunities to present the algorithm with negative feedback. Platforms have already experimented with this in some high-stakes health and legal domains [69, 78], and it has proven effective. Still, little attention has been paid to the mobility and migration context. Moreover, as Vaccaro and colleagues [126] have pointed out, work on contestability has mostly focused on expert users. As HCI scholars start designing for contestability as an approach for social computing systems [4, 69, 125, 126], we argue designing for contestability should not only expand further its focus beyond expert use [69] but also its social contexts, as our findings illuminate it could be important for algorithmic agency and resistance opportunities in the context of migration and mobility. Future work can focus on how to design for contestability in a more context-sensitive manner.

Our empirical findings uncover that as transnational migrants, participants are simultaneously influenced by algorithms originating from both the U.S. and China. They navigate their lives between these two nations, using social media platforms from both countries for purposes such as information-seeking and social support. In HCI and CSCW, design implications are often formulated to cater to issues arising in Western contexts where the imagined users reside. As such, some of these implications may fail to perform adequately when implemented on a global stage or in cross-cultural contexts, such as those between the U.S. and China. In addition, China maintains its own distinct design objectives and regulatory frameworks. For example, last year, Chinese regulators proposed that users should be provided with the option to easily turn off algorithm recommendation services[4]. Inspired by the recent emphasis in HCI on the parallel design of technology and policy [133], we argue the discussed design implications could be more powerful when aligned with appropriate policy implications. Specifically, technologically advanced nations such as the U.S. and China, possessing the capacity to develop their own technologies, should seek common ground on the design and regulation of algorithms. This crucial bridging work could potentially be expedited through the involvement of global NGOs, such as the Office of Information and Communications

[4]https://www.reuters.com/world/china/china-says-set-governance-rules-algorithms-over-next-three-years-2021-09-29/

Technology at the United Nations[5]. We suggest that nations should work together to regulate and optimize algorithmic technologies to better support the needs of transnational migrants and foster better decision-making processes while navigating complex global social media ecosystems housing both U.S./Western and Chinese platform ecosystems.

Taken together, we surface recommendations around content moderation and greater user control over algorithms, which may potentially assuage the concerns that migrant communities, such as Chinese-born migrant technology professionals, have about the content they consume on social media and its implications for their mobilities. In addition to incorporating design considerations, we must advocate for policy interventions on an international scale.

6 LIMITATIONS & FUTURE WORK

While our study makes several theoretical and design-related contributions, we note several limitations. First, our study was exploratory and interview-based. As such, we do not make claims about our findings' generalizability to migrant populations at large or Chinese-born migrant technology professionals. We encourage future work to adopt alternative methods, such as surveys with representative samples, to determine how our findings may be affirmed and/or challenged by studying a larger population of Chinese-born migrant technology professionals or other migrant populations. Larger-scale surveys and experimental work can also illuminate the pathways between algorithmic literacy and resistance. Furthermore, participatory design sessions may reveal deeper insights into the feasibility and helpfulness of the design recommendations we elucidate in Section 5.3.

Another limitation of this work revolves around the time we collected data. Specifically, the COVID-19 pandemic shaped the way we collected data (through Zoom interviews) and the content of the interviews as interviewees reflected on how COVID-19 has shaped their migration journeys and work lives. Secondly, interviews took place a few months after the 2020 U.S. election. Thus, the political climate (e.g., pandemic response, gun violence, and immigration policy) may have figured more prominently in the interviews. We encourage researchers to investigate if and how these findings may persist or shift during less politically volatile times.

Our data was also collected at one period in time, wherein we asked participants to retrospectively self-report their experiences migrating to the U.S. for a career in the technology industry. As such, we did not gather data on their early migration experiences in real time. Moreover, some participants reported migrating to the U.S. in the early 2000s, while others migrated to the U.S. more recently, potentially resulting in different experiences with migration and social media. Additionally, while participants discussed possibilities for future mobility — staying in the U.S. or moving back to China — our interviews cannot elucidate whether their interactions with algorithms on social media *actually* influenced their movement (or lack thereof). We can only make claims about how they perceived algorithmically-driven social media use to influence their mobility *aspirations and goals*.

In addition, there is complexity around the extent to which and on what dimensions Chinese-born migrant technology professionals are privileged and marginalized. While many participants reported being privileged financially and professionally, at the same time, they were marginalized based on factors like race, gender, and ability. That is, participants' migration motivations, privilege, and vulnerability are often not clear-cut. As migration scholar Sandro Mezzadra notes, the relations between migrants' "political engagement and the wide fabric of practices" are often fluid and dynamic [90]. This study investigates the social media use of 20 highly educated Chinese migrants and how their education and technical skills translate into algorithmic literacy and resistance.

[5]https://unite.un.org/

We have reported on the specifics and situated practices of participants' experiences, which our semi-structured interview methods were apt to explore.

Finally, while our findings challenge the promise of algorithmic literacy on an individual basis, our methods cannot speak to whether or how Chinese migrant technology professionals' algorithmic literacies – on a collective level – may be a fruitful starting point for effective resistance via collective action. Given the increasing work around algorithmic audits [89, 106], including user-led algorithmic audits [44, 111], as mechanisms for revealing harmful implications of existing algorithmic technologies, future work may investigate to what extent these kinds of auditing practices may leverage existing algorithmic literacies for effective and collective algorithmic resistance. Though migrant programming professionals tend to be overworked and deal with manifold challenges, it is possible that they could be incentivized to engage in such collective resistance efforts.

7 CONCLUSION

In sum, we draw from interviews with 20 Chinese-born migrant technology professionals in the U.S. to demonstrate how they use social media to address their unique needs as highly educated migrants. In addition, we bridge the HCI and social science research regarding algorithmic mobility and contribute to a human-centered conceptualization of algorithmic mobility and its broader implications based on prior work and our empirical findings. Specifically, we contribute to a human-centered conceptualization of algorithmic mobility as *socially and algorithmically produced motion that concerns the movement of physical bodies and interactions as well as associated digital movement*. We introduce a fourth dimension of algorithmic mobility: *algorithmically curated content on social media and elsewhere based on facets of users' identities directly influences users' mobility-related aspirations and goals such as how, when, and where they go*. Moreover, we demonstrate how participants who exhibited high levels of algorithmic literacy perceive the influence of social media recommendation algorithms on their personal and professional lives. Despite their high levels of algorithmic literacy and awareness, participants did not feel empowered to strategically resist the negative influence they perceived social media algorithms to have on their lives. Thus, we question the link between algorithmic literacy and algorithmic resistance. We call for transnational policy interventions regarding algorithms and highlight several design considerations that may help social media users, including migrant populations, enact greater agency over social media algorithms – namely, content moderation, algorithmic user-control, and contestability.

ACKNOWLEDGMENTS

We thank the participants in this study for sharing their experiences with us and to the anonymous reviewers for their helpful feedback. We also thank Silvia Lindtner for providing valuable early feedback on this work. We also thank friends and colleagues who provided feedback, including Cami Goray, Chiao-Yin "Joey" Hsiao, Sylvia Darling, and the members of the The Community Research on Identity and Technology (CRIT) Lab at the University of Michigan.

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Received January 2023; revised July 2023; accepted November 2023