# How Remote Work Can Foster a More Inclusive Environment for Transgender Developers

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*Abstract*—In this position paper, we claim that remote work offers a mechanism of control for identity disclosure and empowerment of software developers from marginalized communities. By talking to several transgender software developers we identified three themes that resonate across the trans experience and intersect with the advantages to working in software development remotely: identity disclosure, high-impact technical work and the autonomy to disengage and re-engage. Based on these themes we identify several open questions that the research community should address.

*Index Terms*—OSS, remote work, computer-supported cooperative work, inclusion, gender, transgender, LGBTQ+, software developers

## I. Introduction

Popularized by the Open Source Software (OSS) movement, remote work has evolved to become a foundation of how software developers work. Software developers not only work remotely more than any other profession in the US [1], but for 10.2% of them the opportunity to work from home or remotely is the highest priority when looking for jobs [2].

At the same time, remote work has contributed to developer autonomy and independence by creating space for the individual and acknowledging their merits [3]. Understanding the advantages of remote work we could also increase who feels comfortable being a software developer. We make the following claim:

> Remote work offers a mechanism of control for identity disclosure and empowerment of software developers from marginalized communities.

As the first step towards understanding how we can actualize remote work, we focus on the experience of transgender software developers. *Transgender* or *trans* refers to "people who move away from the gender they were assigned at birth, people who cross over (trans-) the boundaries constructed by
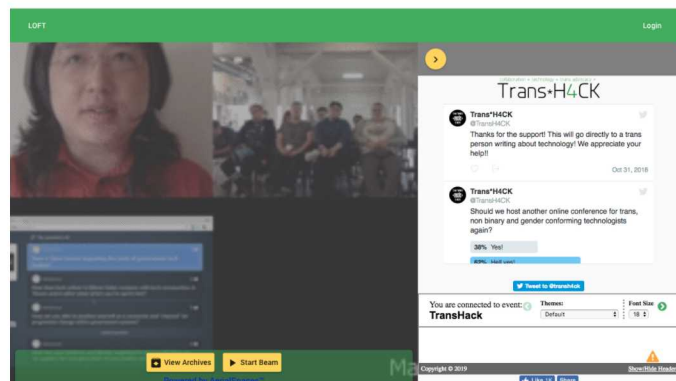
Fig. 1: Trans*H4CK's LOFT, a live collaboration platform, creates safe educational spaces for transgender learners in technology [8].

their culture to define and contain that gender" [4]. Recent surveys of software developers report that 0.7–0.9% of software developers identify as trans [2], [5], [6] almost twice the percentage of trans individuals in the US population as estimated by Meerwijk and Sevelius [7]. Despite this higher representation of trans individuals in software development, little research has been conducted to understand and document the experiences of these marginalized tech workers.

In this position paper, we argue that remote work gives workers greater control of their professional identity, and thus can provide sources of empowerment for transgender software workers. We also highlight avenues for future research into the role that software engineering technologies and methodologies play in promoting inclusion.

## II. Background

Remote work has revolutionized work itself, both within the OSS community and beyond, presenting both new solutions and new challenges related to distance, culture, and collaboration readiness [9]. Of particular interest to social scientists has been the interplay of remote work, gender, and the participation of women in the workplace [10]–[12]. As the home environment, a popular location for teleworking, is commonly associated with femininity, while paid work outside home with masculinity, the experience of working from home might be experienced by women as confirming their gender

identity [13]. On the other hand, diversity of remote work has been observed to be capable both of reinforcing traditional gender norms as well as challenging them [14].

More generally, recent research has demonstrated how ostensibly technical concerns like out-of-date documentation can create barriers to entry for women seeking to participate in open-source software development [15], how gender balance correlates with productivity in GitHub projects [16] or likelihood of suboptimal communication patterns [17], and on differences in activity of individuals of different genders on such software engineering platforms as GitHub [18] and Stack Overflow [19]. This being said so far the studies have focused on the opposition of women and men with gender either being reported by survey participants or inferred by automatic tools based on names and avatar images. However, we believe that a more careful understanding of gender identity and expression must be part of the ongoing discussion about gender equity; software engineering research must consider the position of the *gender spectrum*.

### III. APPROACH

In preparation for this paper, we had an informal exploratory conversation with a transgender software developer. We then conducted formal semi-structured interviews with two additional transgender software developers. We asked participants about how they share their identity in professional identity management, platform specific barriers, online safety, and perceptions of inclusion. After conducting interviews each author reviewed audio recordings and identified common themes describing what interested participants about careers in software development.

### IV. PRELIMINARY FINDINGS

We identified three themes that resonate across the trans experience and intersect with the advantages to working in software development remotely. Each theme includes quotes from participants, online reflections from openly transgender software developers, and supporting research across HCI to address the depth of these themes.

**Identity Disclosure.** An advantage to contributing to OSS is the ability to present yourself however contributors see fit. From our interviews, participants described that an advantage to being a software developer is their control of how they share their professional identity across platforms. One participant described how they control their identity on Stack Overflow differently from GitHub: *"Stack Overflow has constrained expressions of identity. It's up to you what content you want to fill in. GitHub for a while it was required you expose your email address to the rest of the world."*

The ability to control how participants present themselves has been a documented challenge of trans people in the work place. Daniela Petruzalek, a software developer and openly transgender woman, highlights differences in collegiality before and after her transition [20]: *"I was no longer a person to be asked for opinions, the ways I had previously solved my daily challenges were no longer relevant. When I was a man,*

*I was taught to brag about my feats, to take ownership for my winnings when I started doing that as a woman, oh my, 'she's just too arrogant', or, 'she's not that good as she says'."*

She goes on to express how the ability to be perceived as presented is a means of security in tech [20]: *"The obvious drawback of not being passable is that you become an instant target. So passability[1] is not only an identity goal, its also a mean of self-preservation."*

Likewise, others identified that careers in technology can offer a layer of protection and authenticity for transgender people [22]: *"GitHub's Sanchez said she noticed the way tech can add an added layer of protection and authenticity for transgender people by watching her children, who identify as gender queer, interact with it. Using computers, they can say what they really mean without fearing for their safety or worrying about being stared at."* Likewise, drawing from prior research on identity transition management techniques [23], we know that having tools to segment identities across one's personal life is paramount. We see that the ability to have control over that segment is important for professional work is just as important.

**Economically Stable Work.** Contributing to OSS is high impact technical work that can result in more productive software [24]. In fact, many software developers around the world get paid to contribute code remotely [25]. The economic advantage of contributing to high-value knowledge work remotely presents an opportunity for transgender community members fight the severe economic hardship that transgender people disproportionately face [26]. Angelica Ross, openly transgender founder of TransTech Social [27], expressed how a career in technology presents a new opportunity to level the playing field [28]: *"Technology has totally leveled the playing field for someone like me. I can get on the internet and watch tutorials. I have the drive to spend five hours a day to teach myself a skill."*

From our interviews, participants acknowledged that they strategically been able to distance their technical merits from the their personal identity: *"You cannot tell from my technical profiles that Im transgender. I dont make a big deal that in professional context. Its just not relevant."* This identity presentation approach was not used by all participants, however, those that did provide examples of how a career as a software developer can be an economic vessel to success.

**Autonomy to Disengage or Re-engage.** In the sometimes toxic environment of tech companies [29], when one's emotional safety is threatened they must often find refuge in a physical location in order to remove themselves from that harm. In online work environments, tech workers can simply disengage by closing the computer. Participants described their frustration with engaging communities where they have to be weary of their safety: *"When [organizations] say [they] have safe space and don't take the steps to truly make the space safe. You have now encouraged these people to be vulnerable*

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[1]Riley et al. define *passability* as "an individual's ability to appear and be treated as his or her preferred gender" [21].

*where there safety is compromised. It's a very dangerous trend.*" Similarly, Scheurman et al. unpacked the challenges transgender people face in order to identify a safe space especially when these same spaces can make marginalized users a target [30]. One participant acknowledged their frustration with this danger: "*I'm angry that the fact that people want to target me limits what I can do publicly. It's unfair and it's dangerous and it's just not right.*"

The dangers of these communities have resulted in some users resorting to preventative measures when confronted with dangerous scenarios. Petrazualek describes one scenario where a trans software developer re-engaged on her on terms by remotely presenting a keynote speech at a tech conference [20]. The dangers of harassment are not uncommon for transgender people but with the use of leveraging the affordances of remote work, many have been able to take control their interactions [31]: "*The Internet, with all its problems and all its flaws, has reminded me that I do have a voice. It's been a platform for spreading sorely needed awareness around issues like these. Without it, I know I'd continue suffering in silence. More than that, it's brought me the single most invaluable resource for dealing with these problems: my friends. Because of them, I don't have to deal with these things alone.*"

## V. Discussion

The ability to create and assert one's personal and professional identity is key to engagement within a technical organization [32]. As one software engineer at Google put it in an interview with Catalyst, "*Identifying as trans is part of who I am, but first I am a human, then a woman, then trans, then a software engineer*" [33]; that is, being a woman or being trans comes before being a software engineer. Based on our review of the literature, and our small number of interviews, we hypothesize that remote work technologies can increase the sense of empowerment transgender people have to be authentic and effective in their work.

This being said, one should also be aware of the risks that might be incurred by remote work. For instance, as the home environment, a popular location for teleworking, is commonly associated with femininity, while paid work outside home with masculinity, the experience of working remotely might be experienced by women as reinforcing the traditional gender role [13]. Another risks incurred by remote work might include social isolation as well as blurring the boundaries between the private and professional spheres.

In our study we join a growing community of researchers in calling for more study into how software engineering tools, techniques, and methodologies affect marginalized communities. We invite readers to consider how the mechanisms used to create software can support engagement. Some open research questions to investigate include the following:

- **Modeling the Gender Spectrum**: As a cognitive walk-through strategy, GenderMag provides a lens through which we can study gender inclusiveness in design [34]. The model treats gender as a construct and is neutral with respect to gender identity, but we hypothesize that there

are nuances to the experiences of transgender women that may be overlooked when considering all women in aggregate. Building upon previous efforts, in what ways can future work explicitly model the gender spectrum?

- **Building Inclusive Socio-technical Communities**: Lucero et al. argues that social media technologies are a mechanism for LGBTQ people to comfortably explore their own identity [35]. Meanwhile, within the software engineering community, the use of social communication channels to learn and do work is now widespread [36], and this has raised questions about the experiences of women in this new environment (see [37]). With gender identity in mind, can these technologies be made more inclusive?

- **Understanding Depth in Diversity of Contributions**: Recent work has examined the relationship between gender and software development activities such as brainstorming strategies [38], pair programming [39], and handling pull requests [40]. Interviews, surveys, and empirical studies can reveal dimensions of gender identity in every-day software development practices.

## VI. Conclusion: A Call to Action

In this work, we examined the interplay of gender identity and remote work technologies could give transgender developers more control over their workplace interactions. Beyond this, we sought to show how the technology that software engineers develop and use can empower and encourage the participation of underrepresented and/or marginalized communities in software development. To borrow a phrase used by Schlesinger et al., we encourage researchers and practitioners to think of equity-forward design [41] in software engineering. Within the software industry, initiatives have been started by Trans*H4ck [8] to create a safe space where trans programmers can ask for technical help.[2] Likewise, tech incubators such as TransTech, a co-working and co-learning community, to support and economically empower transgender people to launch careers in tech [27]. The research community has a parallel role to play in advancing these issues.

## VII. Acknowledgements

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