

A narrative exploration of the in/authentic experiences of Black engineering interns (Work in Progress)

Gretchen Dietz (Graduate Assistant)

Gretchen Dietz is currently a Postdoc at the University of Florida that is transitioning to an Assistant Professor of Teaching at the University of North Carolina at Charlotte in Fall 2022. Her research interests include diversity, equity, justice, cultures of inclusion in engineering and engineering identity development for underrepresented engineers.

Elliot P. Douglas (Professor)

Dr. Elliot P. Douglas is Professor of Environmental Engineering Sciences and Engineering Education, and Distinguished Teaching Scholar at the University of Florida. His research interests are in engineering problem solving, diversity and inclusion, and social justice for engineering ethics. Dr. Douglas has served as Associate Editor and Deputy Editor of the Journal of Engineering Education, Chair of the Educational Research & Methods Division of ASEE, and Program Director for Engineering Education at the US National Science Foundation. He received S.B. degrees from MIT in 1988 and a Ph.D. from the University of Massachusetts – Amherst in 1993.

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Abstract

In this paper, we discuss the preliminary results of a project that explored the effect of internship experiences on racial and engineering identity development for nine Black engineering students, four women and five men. Specifically, within this paper we highlight the narratives of three participants and outline how their internship cultures affected the extent in which they could authentically be themselves in the workplace. This was done through an extension of Faulkner's concept of in/authenticity as a theoretical framework [1], [2]. To understand the experiences of the engineering students, our methodology followed steps outlined by narrative analysis approaches [3].

Shortened narratives of three participants Stanley, Maya, and Evie (pseudonyms) are presented within this paper. Each of these participants had influential internship experiences that had explicit moments of in/authenticity, which is why we highlighted their narratives. These narratives illustrate how professionalism defined by whiteness was the catalyst for their inauthentic experiences. For example, Evie described masking parts of her identity and culture in the workplace, stating, "there's a mask that has to go on because it's just part of being a professional." The participants experienced authenticity when the workplace provided them comfort and they personally had strong identity.

Introduction and Literature Review

Engineering has persistently been composed of predominantly white men [4]. As a result, white men define a masculine culture of engineering [1], [2], [5]–[12]. The culture is often unwelcoming and creates issues for Black and Indigenous People of Color (BIPOC) such as nepotism, cultural mismatch, perceptions of under-qualification, lack of peers, lack of overall workplace diversity and lack of support for minoritized people [13]–[16]. Throughout undergraduate education, many engineering students are introduced to these workplace cultures via internships. Internships are important because they strongly influence career decisions and opportunities [17].

Internships and cooperative education programs are valuable for engineering students [18]–[22]. Internships and co-ops provide practical engineering experiences and aid in the development of engineers [23]. They also have been found to equip engineers with confidence [18], [23], [24], motivation [24], enjoyment of the work [18], a deeper understanding of engineering [18], [25], networking skills [23], [25], and improved communication skills [18], [23], [26]. Engineering students who have internship experiences have also advanced with improved grade point averages, a shorter time to degree, and a higher starting salary than students who do not have the experience [26], [27]. Overall, internships have been found to improve retention of young engineers within the profession through socialization into engineering and development of an engineering identity [18], [24].

Minimal studies have been conducted on the internship experiences of Black engineers [28]–[32]. As part of the minimal research, Schar et al. studied data on internship involvement according to gender, underrepresented minority (URM) status, and first-generation college (FGC) status [31]. They reported, “Regarding general co-curricular activities, women and men report being comparably involved in internships/co-ops at (54% and 60%), whereas URM and FGC students are significantly less involved (41% and 46%) than are their non-URM and continuing generation peers, respectively” (p. 9). Internships can be racially hostile places that influence the experiences of students of Color. Interns have described how race and ethnicity shape internship experiences through negative interactions such as invisibility, lowered expectations, assignment of menial tasks [32], social isolation, mistrust [33], and stereotype threat caused by supervisors’ doubts about abilities [34]. Although personal agency propels students of Color toward success, racist interactions have consequences such as heightened anxiety, anger, imposter syndrome, and compulsive work [35].

In some instances, students of Color have benefited from participation in internships. Some benefits include a higher likelihood of graduation and higher starting salary than those who did not participate [29], an understanding of the workplace culture and employability [36], and professional identity formation [32], [37]. No studies have looked solely at the effects of internships on Black engineers’ identity development.

Thus, in order to explore the influences of internship experiences on Black engineers’ identities, the following research questions served as a guide:

1. How do internship/coop experiences influence identities among Black undergraduate engineers?
 - a) How do internship experiences affect the extent to which they could authentically be themselves?
 - b) How do internship experiences affect the development of their racial, intersectional and engineering identities?

Theoretical Framework

Black professionals often mask forms of their identity to blend into the workplace cultures that they are subjected to [38]. Engineering has a dominant white male culture which leads to cultural mismatch, identity conflict, compartmentalization of work and social lives, diminished job satisfaction, and psychological stress for Black engineers [13], [15], [39], [40]. Faulkner theorized a concept of in/authenticity experienced by women navigating engineering [1], [2], [7]–[9]. This theory was shifted towards race for this study similar to Douglas, Dietz, and McCray’s application [41]–[44]. We chose Faulkner’s concept of in/authenticity because of its development in an engineering context, and because the oppressive systems of sexism have parallels to racism, especially in engineering. We would like to note that although the experiences of gender and race are not analogous, the shift in in/authenticity towards race illuminates the experiences of Black engineers within climates that privilege white males. In/authenticity was used to identify instances of racially “inauthentic” experiences due to cultural mismatch, or biculturalism [45], within their internships. Moments of “authenticity” were identified when the interns were their true selves within the workplace.

Methodology

For this narrative research, participants were initially recruited through personal contacts and then snowball sampling. Two semi-structured interviews were conducted with each participant using Zoom. The first interview gained insight into what inspired the students to pursue engineering. Within this interview, we built rapport, drew out their influences in their choice of engineering, and began the conversation on race and racial identity. The second interview explored their engineering internship experiences. The interns were asked about their identities within the workplace, the workplace climate, their perceived fit, and more to gain their perception of the workplace climate and its effect on their identity development. The interviews were recorded, transcribed, pseudonymized, and verified for accuracy by the first author.

The data analysis process was guided by a multi-step process that integrated Polkinghorne's [46] criteria for narratives and Doucet and Mauthner's [47] Listening Guide as outlined by Pawley and Philips [48]. The process included multiple readings using the theoretical frameworks as lenses. A codebook was created with a priori codes based on the frameworks, thus within each phase of reading codes were assigned. After the interviews were analyzed, storied narratives were written for each participant pulling together the main story line from the analyses. Narratives were cleaned with narrative smoothing to allow an easier flow of reading without losing meaning of what was said [3].

Findings

In this section, critical moments within the storied narratives of Stanley, Maya, and Evie are presented. The three participants highlighted in this paper were selected because of their detailed experiences with in/authenticity in relation to their racial identities. Their explicit experiences and thorough descriptions provide rich foundation to outline the scope of this project in its work in progress status. This was not a means to generalize their experiences, rather it was a way to provide information for transferability. Stanley is a 24-year-old Black Hispanic male environmental engineering student at a southeastern U.S. PWI. Stanley had one engineering internship with a private company that focused on solid waste.

Maya is a 24-year-old Black female civil engineering graduate from a southeastern U.S. PWI. During college she completed two internships. Her first internship was at a large international company where she did general contracting/engineering and estimation for construction. Her second internship, which turned into her full-time job, was at a large national company. Her role was in construction estimation.

Evie is a 25-year-old Black female industrial engineering PhD student at an HBCU (Historically Black College and University) who graduated from a different HBCU in the southern region of the U.S. with a degree in chemical engineering. Evie had three internships; two during her undergraduate degree and one during her graduate program. Her first two were at a large oil and gas company. In the first internship, she worked as a production engineering intern. In her second internship she was a reservoir engineer. Although it wasn't during her undergraduate schooling, her third internship was as an industrial engineer and it was influential on her engineering identity.

Stanley's Narrative

Do I wear a mask? “Yeah, for sure. I'm Black and Hispanic, so I do like little things Black and Hispanic in my life. Well, traditionally, I kind of tone those things down because people really don't understand them usually like outside of those two groups. So it's like if I say something maybe in like Spanish people will stop the conversation, be like ‘What does that mean?’ it's just awkward (laughter). But also, with both Black and Hispanic people, they traditionally have less of filter so they're more like open talking about different things and maybe talking about things that would be considered inappropriate in the workplace or whatever people deems inappropriate. So you definitely have to kind of shut down a lot of aspects of yourself to seem professional. I feel like white people don't really have to do because what they do is more of like, ‘oh, it's still professional,’ even though it's like, eh, objectively it's as unprofessional as these other things.”

“So you definitely don't present that you know [about an issue] unless asked directly. They'll be like ‘Oh, what do you think about this thing, this issue?’ I'll tell you straight up, but I'm not gonna bring it to the forefront immediately. I mean, it's so interesting because you know the other intern, we have is Black. I remember I brought up some issue to him and the way he responded was like such a white guy response. He was like, ‘I have no idea what you're talking about. I've never heard of that issue.’ It's just like (laughter), and you're looking at him like ‘Bro you're Blacker than me so you definitely heard of it (laughter)’... I think he was guarding. He's just trying to be like this is how you work in a professional setting, you don't talk about these things. But I was like ‘Meh.’”

“He definitely gives me the white guy vibe (laughter). So, at first, I thought, you know, he's gonna be cool and I was like, ‘Oh, I'll have another Black person here’, but then it's like, ‘meh, just kidding.’... You run into different people like that all the time. It's not as prevalent in Black culture because they more put on a mask, just for work and then are themselves outside of the workplace. But it's very, it's extremely prevalent in Hispanic culture where like my wife's parents like they're passable for white so they kind of get rid of culture, even at the home... So yeah, I think the mask it gets a little more permanent. It gets a little bit more permanent with Hispanic cultures, because they can pass as white versus Black cultures, like at the end of the day, they're still perceived differently so they kind of act that way at home. They kind of act like their own selves at home versus they act differently at work... I'm more on the Black side. I try and express myself. I even try to do it a little bit more at work than I probably should. And you know my past jobs it's gotten me in trouble but I'm like, I don't care. You know, just keep going (laughter).”

“At the core, I have the person who I am that kind of makes me a good professional because it's like I'm driven and I work hard, you know, I get things done on time... I just feel like I have to be more reserved. I mean, that's pretty much it. You kind of do those little things, like probing comments and questions to your coworkers to see like at the level they're at of openness, but and then you see you know obviously like the more open, they are, the more you kind of open up to them, but that takes time, it takes like you know interacting with them which is just difficult in my current internship... [I] probably amplify the hard workingness of my Hispanic culture and temper kind of more loudness of the both cultures... I'm not very loud person in general but it's just not received very well to be like loud in the workplace.”

Maya's Narrative

“Going back to culture, there's a lot of like, ‘Oh well. Other people aren't really interested in construction. This is more of something that you know families passed down from generation to generation. It's the culture, the culture, and it's just like, well there's people of Color that are interested in doing this, so I don't know what part of that isn't a part of the culture. So it's kind of annoying to hear that. And I feel like it kind of does play into how the subcontractors and other vendors kind of respond to you before they get to know you more and then it just kind of becomes a working relationship, but I don't know if it's personal, I don't think it's personal. I think sometimes you go in and you feel like you have something to prove because people are kind of talking down to you or they're not listening to you or hearing you because of who you are and yeah, it happens to women and being a Black woman, I also feel like it's like an extra layer and I think that is how race kind of shows itself in the industry. It's just, you need to prove that you can do your job more than somebody else, especially a white male has to prove himself and positions that we hold are not, I mean, I am happy to be in a professional role, but generally, those aren't the positions that we would have in the company.”

“I didn't feel like I was wearing a mask and I'll just go back to that point of just like it's just how I was raised to make sure that I am doing my best to put myself in the best light. I'm still kind of a hyper person. I'm still kind of a loud person. I'm still very talkative and friendly and that is how I live my life inside of work and outside of work. I just make sure that I am respecting myself and also like just representing myself in the best way... I think it's a little bit different for me, just from like my mom, like I said she was from [West African Country]. She was around a lot of Black people... She just kind of comes in like I'm myself, whatever, and I think she kind of passed that on. My dad, [Caribbean Island] kind of had more of that racist, kind of like dealing with all that stuff and when he came over to [Southeast State], the same kind of thing. So he understands the need to really like... Don't go in there, acting a fool because you won't have the same leeway as some other people. I feel like I just having those two together kind of helped me not have to feel like, oh, I need to be a completely different person or need to hide myself or I can't speak up or this and that, you know. But yeah, so in that way, no, I don't feel like I'm wearing a mask. I just feel like I was raised to kind of have a built in mask that's become my personality (laughter).”

Being a Black engineer, “I think it makes me work harder for sure. Because I want to make sure that I can maintain a good position. I don't feel like I can just kick back and chill and, you know, do whatever I want like some other people kind of do, or it takes more time for them to kind of get into the rhythm and they don't really try as hard, which I think ultimately does make me into a better employee, better engineer, and better person because I'm learning. I feel like that helps you learn more when you're doing more and so I think that is one beneficial piece. The other piece, though, is just like feeling like you have to be on the best and not even like the best best best but just be on your best all the time. It's very like draining sometimes. So I think partially, yes it makes me a better engineer, but also makes me a more exhausted engineer.”

“I feel like the same person outside or inside of work, if that makes sense. And I feel like the same conditions apply when I'm out and interacting with people in the normal world and then when I'm interacting with people at work, you know. It's the same kind of, just be on it and make

sure that you are presenting yourself in a way that doesn't misrepresent your entire race and family. Again, doing that keeps you out of trouble more often (laughter) so it's kind of good, but it's just the pressure that you feel all the time, you know.”

As for workplace diversity, “I think I would just be maybe higher morale for myself if there were more diversity. I don't feel sad going into work. I don't feel bad. I enjoy the people I work with. I have a good time, but I think I could have an even better time if it were a little bit more diverse. Going in I haven't felt like somebody was trying to kick me out of the company or made me feel like I didn't belong there directly, but in not having different people there, it kind of does feel that way.”

They made me feel like I was a part something within my second internship. I worked at a branch office of the company, and at the main office they hosted an “intern event where all the different interns, the ones that were in the main office, the ones that were on other job sites came together. I remember walking through the office and a lot of the people who worked in the office that weren't part of like the intern development program or anything they knew me by name, and I'm sure a lot of other people by name. And I feel like that really stood out to me because it made me feel more like I was part of something and it kind of just goes back to how much people can affect your experience in the workplace and make you feel like you belong somewhere or you're at home. I think that really helped me because I was already kind of nervous at the fact that it is predominantly white. I did not see a lot of diversity in the office. So I was like, ‘oh gosh, like these people are gonna like me? Like, how are they going to treat me really?’ you know, that whole like looking at the door, looking to your side, making sure you're not in a weird position, but yeah, I felt like, wow. That was a difference from my first internship where it was just like, okay, you like the people you directly work with know your name, but all the other people who come in it's not like they know you or they're trying to get to know you that much. It's like, ‘oh, you're part of that group, okay, so stay with that group.’ This one was more like, ‘oh, hey, let me tell you more about the company. We love it here. We love that you're here.’ So that really stood out to me because it's always the people, it's always people that build an experience, not just the work.”

Evie's Narrative

“During this political time [summer of 2020], I'm not gonna lie to you it was a lot more difficult than I expected. The other internships I mean, it was me. I was the only Black person in the internship, and I was only Black intern as well. But I feel like kind of what's going on in the world right now, made it a lot more like, there wasn't tension, but it just made a lot more like difficult and so I didn't feel I never really felt some type of way towards any of like the employees. I didn't feel that anybody was treating me differently or anything like that... I never really felt like an outsider or anything, however, because there wasn't many people in the office that were in the office, the people that were in the office, we had a lot of people, I don't know, our office was where a lot of the people who talk to vendors or the outside people so they're always on the phone constantly talking to the outside people so we could hear their conversations and most of the times we're laughing. It's like a laugh for me and the interns because it's very hilarious to hear what they have to say and it's just really funny sometimes what they say. But other times you know when you're talking about you know things about the world and what's

going on and you know politics and stuff like that, I felt some type of way. But, I mean, that's just because I'm overhearing some of these conversations so it's not like anyone's doing anything to me, per se..."

In terms of masking, "Oh god yeah I mean you have to [wear a mask]. Not necessarily you have to, but... ooo that's hard. That's a... And it's also, it's also different from person to person. You know, not every Black person is the same, but for the majority, how we are naturally, people can take offense to that. You've definitely heard the angry Black woman stereotype. If I get too aggressive or I try to express myself or express what you're doing wrong to me, then it gets turned around on me. So, you can't necessarily come into the workplace and show all those faces because people will judge you differently. That comes with territory as well. We know this and we don't, I don't think most of us have an issue with putting on the mask, we just know it's just what we have to do... It's a cultural thing and you know that's not professional... So, there's a mask that has to go on because it's just part of being a professional and I feel like that's not just a Black thing as well. I feel like a lot of people have to do certain or not even a lot of people have to tone down certain things when you come into a professional setting... It's called being a professional."

"The only thing I could think of that I don't bring to the workplace are probably like my nails that I can think of. I like long nails, and they let me do that which is crazy, they probably shouldn't, but they let me wear my nails all day long and do what I want. But I would never, never wear these long nails at work. That's unprofessional to me..."

Cultural and racial diversity influence my work because "I am like a mini activist. I can't lie to you so. Now, it kind of like sprung out of me something, it feels some type of way. So as far as diversity in the workplace, when they have all the different employee work groups and things like that, specifically for diversity or for African Americans, I'm definitely involved. I try to bring awareness to the things that's going on in the world. I feel like a lot of ignorance in the world is just because people aren't aware, they have never been taught. No one has set them down and say 'Hey, did you know that this is the real truth, and this is not the real truth?', which I don't fault anybody for that so I just try to bring that awareness. I like getting involved. I love to volunteer... I love giving back like volunteering doing anything that I can to bring just diversity or awareness about the Black community to the workplace in a professional setting, like definitely a professional setting I'm not like going around like preaching to people."

In my first internship, "because my mom was involved with the company, I was very involved as well. They had, I think it was called the Black Engineering Network and so I was very heavily involved in that. I actually got a scholarship my freshman year from that group... So, this year, I didn't get a chance to volunteer that much during the internship, but I did join the Black employee groups and they had \ Zoom meetings and things like that. I was definitely involved... [These groups] definitely helped me grow, especially this past summer. There were a lot more Black people this summer than I've ever experienced I think in an internship. And they were all employees so the fact that I kind of had that guidance that was something that was helpful... The internships helped me definitely grow my identities as far as what I was exposed to."

Discussion

Authenticity

Each participant had some experiences of authenticity within their internships. Stanley had a strong commitment to his racial identity. In his narrative he expressed that “I try to express myself. I even try do it a little bit more at work than I probably should.” He also was authentic when others opened up to him. He would authentically talk about issues when asked. He stated, “you definitely don't present that you know unless asked like directly, they'll be like ‘Oh What do you think about this thing, this issue?’ I'll be like, I'll tell you straight up.” He continued, “the more open they are, the more you kind of open up to them, but that takes time.”

Maya felt authentic when she had comfort and felt a sense of belonging with her coworkers. She described an intern event at the main office of her company where she felt like she belonged, and she described how much of an impact people have on workplace experiences. She explained that people knew her by name which made her feel like she “was part of something.”

Like Stanley, Evie had a commitment to her racial identity that blossomed within her last internship. She authentically became “a mini activist” and continued describing, “I love giving back like volunteering doing anything that I can to bring just diversity or awareness about the Black community to the workplace in a professional setting. Definitely a professional setting I'm not going around preaching to people.”

Inauthenticity

There were various moments of inauthenticity throughout each of their narratives. These were moments where the participants were not their true selves, hiding pieces of their cultural and racial identity. Stanley described codeswitching and cultural mismatch within his workplace. Stanley described that he “tones down” his “Black and Hispanic” sides within the workplace because people outside of these groups won't understand them. He also described this as being “more reserved” and “shutting down a lot of aspects of yourself.” Importantly, he recognized how this stemmed from whiteness and systems of oppression. Stanley stated, “I feel like white people don't really have to do because what they do is more of like, ‘oh, it's still professional,’ even though it's like, eh, objectively it's as unprofessional as these other things.”

Maya's moments of inauthenticity were around the feeling of having to prove herself, having a built in mask, lack of comfort, and tokenism. Within engineering she described that “you feel like you have something to prove because people are kind of talking down to you or they're not listening.” She recognized that there was an exclusive culture to construction and engineering that caused women and people of Color to have to prove themselves more than a white man would have to prove himself.

Maya also described the need to mask as a normalized (authentic) thing, yet this was due to a racialized society that created and normalized the need to mask (inauthenticity). The lack of diversity of the workplace caused inauthenticity for Maya. She also described that she didn't have the same level of comfort as other coworkers did. She had to work hard to prove herself to

them, and she was pressured to feel as though she had to “be on your best all the time, which was “draining.” Lastly, she described that the lack of diversity made her feel like she didn’t belong, leading to inauthenticity.

Evie had experiences of inauthenticity in relation to masking, stereotype threat, and cultural mismatch. She described how “you have to” wear a mask, and that she “can’t necessarily come into the workplace” and show all of your personality because of stereotype threat and judgments. She also described that this is a normal “cultural thing” and it is done because cultural aspects are “not professional.” Because of whiteness, she had cultural mismatch and acted inauthentically. Another piece of her identity that she didn’t bring into the workplace were her nails, which she also deemed “unprofessional.”

Looking across participants, they described aspects of codeswitching, cultural mismatch, masking, and the need to work harder. These phenomena were not new, rather they were consistent with previous studies. Gibbs studied Black engineers and found that in workplaces they experienced cultural mismatch and the need to outperform white coworkers by 3-5 times in order to be considered equally qualified [15]. Also consistent with literature, the interns described the need to mask [38] or live a biculturalized life [45] due to racialized cultures. All of these experiences stem from whiteness and racialized systems.

Racialized Professionalism

Each of the participants described moments of inauthenticity in relation to what is deemed as appropriate professional behavior. As the participants described, there are certain guidelines and expectations of what defines professionalism. There are published guidelines for workplace etiquette (e.g. [49]; [50]), although, these guidelines are problematic for people who are typically marginalized and those whose identities differ from the dominant group that sets the customary workplace etiquette. As Stanley described, professionalism is defined by whiteness and benefits white people. The effects of racism are mediated by the idea of professionalism [51] because of the abstract liberal view that professionalism is standardized, therefore professionalism cannot be racist. The participants described the need to inauthentically change to fit standards of professionalism, thus this fed into the cycle of what is considered professional.

Whiteness defined the intern’s workplace cultures which led to inauthenticity. Similar to McCluney et al., many participants within this study described the need to codeswitch in order to fit into the workplace culture [52]. The racialized workplace caused each of the participants to mask parts of their identity in order to fit into the workplace culture and make others (white people) comfortable. McGee studied a similar phenomenon in STEM [34], [53]. She found that students of Color limit their racial and cultural identities through biculturalism to combat biases, toxicity, stereotypes, microaggressions, and negative assumptions about their intelligence and STEM identity. Maya described that being the only one created heightened awareness and less comfort than her white coworkers. Like Walton et al.’s study, lack of diversity in a professional setting detracted from a sense of belonging in the workplace [54].

Authenticity was also experienced when the interns had a strong commitment to their racial identity, or internalization of their identity. Similar to Helms and Piper, as people of Color

develop and grow in their careers, racial identity is internalized and there is “positive racial-group commitment, humanistic orientation, and internally defined racial attributes” [57, p. 127]. Stanley and Evie showed strong commitments to their identities and were agents within their workplace cultures.

Conclusion

Through this work in progress, it was found that most of the interns experienced inauthenticity due to professionalism and whiteness. Experiences related to inauthenticity included codeswitching, masking, cultural mismatch, and tokenism. The participants experienced authenticity due to strong identity and a sense of belonging. Authenticity was experienced through confidence in self, coworkers being open and welcoming, and through activism.

Overall the narrative accounts presented in this work offer ways to support Black engineering students in internships. Most importantly, they bring into question the concept of “professionalism,” suggesting that it represents a white normative expectation that leads to inauthenticity. Instead, engineering workplaces can support authenticity and engineering identity development through practices that acknowledge and welcome different ways of being a professional.

Future Work

Although internships are important for understanding professional skills and workplace cultures, to our knowledge no studies have addressed how whiteness and maleness define professionalism and engineering internship culture. Future work will consist of studying culturally relevant professionalism and combatting white and male normative values within engineering. These considerations for future work are particularly important for women of Color given that they experience oppression from multiple marginalized identities. It is important to approach this work with combatting racism and whiteness at the forefront. With these efforts, we hope to increase support and action towards more diverse and inclusive environments.

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