Motahhare Eslami   Diversity Statement

I have always been a strong advocate for diversity in my research and mentorship practices. This drive largely stems from the many challenges related to diversity that I have encountered in both my personal and academic lives. While these challenges were sometimes very frustrating, they have made me a stronger person over time and motivated me to be vocal about diversity in my community and beyond. Here I detail some of these challenges, and how I have strived to promote diversity through my career.

Building Diverse Communities

My first encounter of the diversity challenge in gender comes back to high school when I was accepted as the only girl in my high school at the first stage of Iranian National Olympiad in Informatics (INOI), the most competitive Computer Science contest in the nation. During that time, all-girl schools had usually limited resources for providing teachers for computer science-related topics in comparison with all-boy schools. This lack of a level playing field motivated me to become a teacher myself: After gaining experience in INOI, I started holding study sessions for younger girls to teach them computer science and programming topics and prepare them to participate at INOI. In these sessions, I tried to be a learner, not just a teacher, by sitting with other students and solving challenging problems together. I felt incredibly proud when one of my students was accepted at the first stage of INOI that year and was admitted to the Computer Science program at Sharif University of Technology, the most prestigious Engineering University in the nation, the year after. After having more girls admitted to the first stage of INOI in those couple years, my high school started recruiting computer science teachers to prepare more students for this competition. Today, the number of girls accepted to INOI first stage in my school has increased significantly, and sometimes exceeds the number of boys.

The challenge of gender bias in majors like Computer Science became more evident during my undergraduate studies: boys entered the university with a much stronger CS background than girls due to the difference of educational facilities between all-boy and all-girl high schools in special engineering topics. Many of my friends and I got low scores in programming courses during the first few semesters, which made some quit the CS program altogether. This frustrating situation inspired me to continue the teaching experience I began in high school: I started holding study sessions three other girls in CS in our dormitory room. In these sessions, we sat together, discussed the major problems we had in the programming courses, and those who were stronger in a topic would teach it to the others. After one semester, our small girl-study group expanded to more than 15 students. We would sit hours and hours together, review different courses' materials, and help each other. Our scores went high significantly during the following semesters, and many of us achieved high GPAs at the end of the undergraduate program. I, myself, was able to gain the first rank in GPA in the Computer Engineering Department, Information Technology program. These experiences together have motivated me to continue building diverse communities in my future academic career.

Research on Diversity and Discrimination

My encounter to other types of diversity challenges during my graduate studies motivated me to promote inclusion and confront discrimination in my research as well. This all started when I was barred from returning to the U.S. after I attended a conference in Canada, while I held a valid student visa. Due to the reasons that are not still clear, I was forced to spend a month in Canada to figure out the problem, and when the problem did not resolve, I had to go back to my country, Iran, for about a year until I was able to receive a new visa. During this time, my PhD was put on hold while my spouse, also a PhD student, could not leave the U.S. as he might not be able to get back as well. Not knowing whether or not I would be

able to pursue my PhD made this situation scary and frustrating. However, I decided to do my best to figure out the reasons behind this predicament to maybe be able to resolve it. In my conversations with border and embassy officers, I found out something disturbing, but also interesting: everyone blamed the "system" for this problem without knowing exactly what triggered my visa revocation. After doing more research, it turned out that when a person has specific features in her profile (like being from a specific religion or nationality), the system becomes more suspicious of that person, and other facts such as foreign travels, having someone suspicious in their friendship network or conducting searches with special keywords can trigger the system to put that person in a black-list. However, how the system makes such decisions is housed in a black-box.

Observing the severity of a black-box system's impacts on a person's life inspired me to include *systematic bias* to my PhD research upon my return to the U.S. . I started studying algorithmic systems that were biased or suspected to be biased and could cause misinformed user's behavior. I started with developing audit techniques to detect and quantify algorithmic bias. I then explored users' understanding of and behavior around detected biases. Finally, I used this information to build a design that added transparency into a biased algorithm to investigate the impacts of transparency on users' attitudes and intentions. So far, I have applied this process to four algorithmic systems: two search engines (Google & Twitter Search [1,2]), and two rating platforms (Booking.com [3] & Yelp.com [4]). I have found several types of algorithmic bias in these systems which could impact users' personal, social and financial life significantly. Such biases could have more severe consequences when an algorithmic system takes protected class features such as race, gender, religion, and nationality into account (either directly or indirectly) in making a decision (such as recruiting an employee, offering housing options, granting or revoking visa, and predicting future criminals). I am currently doing a housing audit project to understand if online housing advertising agencies discriminate between users based on race or gender. I look forward to continuing this research to support underrepresented communities.

As faculty, I aim to promote a diverse culture among my students, and encourage them to help each other to build inclusive communities together. I also seek to pursue my research about systematic biases against users with protected class features and use my position as an academic researcher to promote underrepresented communities' voices.

References

[1] J. Kulshrestha, **M. Eslami**, J. Messias, M. B. Zafar, S. Ghosh, K. Gummadi, and K. Karahalios. *Quantifying Search Bias: Investigating Sources of Bias for Political Searches in Social Media*. The Computer-Supported Cooperative Work and Social Computing Conference (CSCW), 2017.

[2] J. Kulshrestha, **M. Eslami**, J. Messias, M. B. Zafar, S. Ghosh, K. P. Gummadi, and K Karahalios. *Search Bias Quantification: Investigating Political Bias in Social Media and Web Search*. Information Retrieval Journal, 1-40, 2018.

[3] **M. Eslami**, K. Vaccaro, K. Karahalios, and K. Hamilton. *"Be careful; things can be worse than they appear": Understanding Biased Algorithms and Users' Behavior around Them in Rating Platforms*. The International AAAI Conference on Web and Social Media (ICWSM), 2017.

[4] **M. Eslami**, K. Vaccaro, M. K. Lee, A. Elazari, E. Gilbert, and K. Karahalios. *User Attitudes towards Algorithmic Opacity and Transparency in Online Reviewing Platforms*. **Submitted to** the Human Factors in Computing Systems Conference (CHI), 2019.