DIVERSITY STATEMENT

Pooyan Jamshidi (pjamshid@cs.cmu.edu)

I believe that establishing an inclusive and supportive environment for students across all genders, ethnicities, cultures, and educational backgrounds is key to improving diversity in computer science. As a faculty member, I plan to tackle diversity challenges in four major directions: (1) establishing an inclusive research group and encouraging students from diverse backgrounds to engage in research, (2) organizing community building activities to diversify research in technical areas, (3) using best practices that I have learned from validated pedagogical research in teaching, and (4) participating in outreach activities at schools.

My view on diversity stem from my experiences as a junior lecturer at Kharazmi University, Iran. As my first experience as a lecturer, I was unaware of how being inclusive, especially toward underrepresented groups in computer science such as women, contributes to higher engagement of students in class. After an initial struggle to convince students to engage better, I found out the main reason was that the groups were formed by separate genders (somehow a cultural habit in Iran). I then decided to reform the groups by mixing them together. After this intervention, the productivity of the groups increased considerably as a result of better collaborations between students. I also noticed a higher engagement of students; they asked more and better questions, and volunteered to present their progress and discuss the issues that they faced during the coursework.

Research Mentoring

Despite some recent success (most notably, this year, for the first time at CMU, over 50% of first-year students in computer science were female), almost all computing programs suffer from the perception that these types of programs are created for "geeks" [1] or those who are mainly interested in academic careers [2], and therefore, female students (and others with underrepresented backgrounds) are not willing to participate [3]. These observations are also backed by empirical evidence [4].

My approach. I believe that the key to improving this situation is by actively encouraging minority students to engage in research early on (e.g., by expanding undergraduate research programs), and highlighting potential benefits of a research experience beyond academia (independent thinking and problem-solving skills, which are also highly valued in industry).

I believe that understanding the differences between students with different backgrounds and tailoring individual research plans is crucial to successful mentoring. In the past, I have had opportunities to work or collaborate with students from multiple countries, including many European countries as well as other underrepresented countries such as Nigeria, Pakistan, and Malaysia and most of them were female. These experiences exposed me to the challenges of mentoring students from different educational backgrounds. For instance, I realized that computing curriculums are vastly different between countries. Some curriculum emphasize more theoretical aspects while others place greater weights on course projects. Many minority students have a limited chance to learn about research because they attend undergraduate institutions where research activity is limited [5]. The isolation that many undergraduate minorities experience in school also limits their chances to learn [6]. Based on these experiences, I will develop initiatives to actively expose and recruit underrepresented students to research. Most notably, I will allocate part of my research funding for recruiting and working with REU (Research Experiences for Undergraduates) students. I believe such programs are particularly suitable for minority students that have not been getting experience with academic research.

Community Building

As a member of the scientific community, I get frustrated by the fact that the diversity level of technical events is quite low, and based on my observations, these events are typically male-dominated. For instance, when I first participated to a Dagtuhl seminar, only one female researcher attended the event.

My approach. I believe that as a member of the research community, we have a responsibility to increase the diversity in our scientific events. To improve this situation, when I co-organized a Dagstuhl seminar [1], we took three important actions: (i) we increased female participations by sending invitations to several female researchers whom we knew in our research community; (ii) we also decided to make a public call for participation,

---

[1]http://www.dagstuhl.de/16394

something that is rare for invitation-only events; (iii) we also asked some senior faculties to encourage their female students in their group to apply for our Dagstuhl seminar. Our main intention was to find researchers from unrepresentative cultures and background. While individual events may not have immediate visible impact, I believe that a sustained, long-term effort in this direction will be crucial to building a diverse community.

Teaching

In terms of teaching, I apply best practices about how to avoid implicit bias in the classroom [7]. For instance, I try to give the opportunity to all students to participate, speak and ask questions in class. I also create a diverse team of TAs for my courses since they are direct role models for the students.

Outreach Activities

One of the activities that helped me to improve my mentoring skills especially for diverse backgrounds was engaging with primary students and non-technical people to describe my research work. In 2013, I participated to Young Scientists Exhibition in Dublin [2] which is open to all second-level students from Ireland. Also, I participated to Imperial Festival in 2016, where I showcased my research to the general public [3]. Such occasions are good opportunities to catch the interests of students to become future computer scientists. I also was a mentor for a high-school student for CREST competition, Queens Park School, UK, where I taught the student how to implement a small machine learning idea using Python. These outreach and dissemination activities will always be a part of my teaching and research activities.

References

[1] A. Master, S. Cheryan, and A. N. Meltzoff, "Computing whether she belongs: Stereotypes undermine girls interest and sense of belonging in computer science.," Journal of Educational Psychology, vol. 108, no. 3, 2016.

[2] Susan S. Silbey. "Why do so many women who study engineering leave the field?", Harvard Business Review, 2010. https://hbr.org/2016/08/why-do-so-many-women-who-study-engineering-leave-the-field.

[3] J. Margolis, A. Fisher. "Unlocking the club house: Women in computing". MIT Press, 2001.

[4] D. Ford, J. Smith, P.J. Guo, and C. Parnin, "Paradise unplugged: Identifying barriers for female participation on stack overflow." In Proceedings of the 2016 24th ACM SIGSOFT International Symposium on Foundations of Software Engineering.

[5] P.J. Guo. "Silent Technical Privilege". In Slate, 2014.

[6] W. Aspray and A. Bernat, "Recruitment and retention of underrepresented minority graduate students in computer science," in Report on a Workshop by the Coalition to Diversity Computing, 2000.

[7] J. Margolis. "Stuck in the shallow end: Education, race, and computing". MIT Press, 2008.

---

[2] http://btyoungscientist.com/
[3] http://www.imperial.ac.uk/festival/