Nicholas M. Boffi: Commitment to Diversity, Equity, and Inclusion

In the year after my undergraduate degree, I was fortunate to be selected as the recipient of a one-year Fulbright Research Grant to travel to Israel. At the time, I had never left the United States, and I felt it an important aspect of my education to experience another culture. I chose Israel based on a connection of my undergraduate research advisor, but I was not raised Jewish, I did not know a single person in Israel, and I could not speak Hebrew. When I arrived, most people my age were serving military duty, and many at my educational status were in a different phase of life, which made it challenging to integrate with the culture. The result was an eye-opening experience that gave me firsthand insight into the personal challenges and feelings of isolation that can be pervasive in those who feel like "outsiders". As I've gone further in my mathematical education, I've gained an appreciation for how these feelings can be propagated in academic settings, where systemic biases often discourage under-represented minorities (URMs) and women from pursuing further studies in mathematics. While I recognize that I cannot fully understand the lived experience of these groups, my time in Israel was a formative lesson on the emotional toll that lack of representation can take.

I am therefore committed to cultivating an environment of inclusion and acceptance regardless of race, gender identity, religion, age, socioeconomic status, or sexual orientation. I believe that rich cultural diversity in all forms strengthens us both as people and as researchers. As a course instructor and research mentor at NYU's Courant Institute, I have striven to create an environment where all students, regardless of their background, can thrive academically. I recognize the foundational role that professors can have in educating the next generation of scientists and thought leaders, and how with this comes a unique opportunity for advancing diversity, equity, and inclusion (DEI). I intend to be proactive about working with people of diverse backgrounds through admissions recruitment and mentoring activities such as undergraduate research, and in encouraging them to pursue academic careers in STEM. Below, I outline some of my past efforts in this direction, and expand upon my future plans for involvement in DEI efforts as a professor.

Past efforts

Recruiting women to mathematics. Talent is blind to race, gender identity, socioeconomic status, and sexual orientation, but this is not currently reflected in undergraduate and graduate statistics in mathematics. For example, in 2017-2018 (the latest report by the American Mathematical Society), only 25% of PhD recipients in applied mathematics were women (Figure D.1, [1]). These statistics have motivated me to take specific actions aimed at improving representation of women in the field. For example, as described in my teaching statement, I was the program coordinator for the Applied Mathematics Summer Undergraduate Research Experience (AM-SURE) program in the summer of 2022, where I was involved in selecting the incoming students. I saw this as an opportunity to recruit promising young women to mathematical research, and I ensured that roughly half of the incoming students were female. I found it greatly rewarding to mentor them through their summer research projects, many of whom were hesitant about mathematical research and graduate school, and had no prior research experience. Several commented in their exit survey on the benefits of the experience, and then went on to enroll in a PhD program in applied mathematics the following year.

Ensuring a diverse representation. Historical and societal pressures are active forces against DEI within the computational and mathematical sciences. Even in the subfield of AI fairness in healthcare – a domain explicitly concerned with DEI – a recent meta-analysis found significant under-representation amongst principal investigators: 66.3% were white, 27.2% were Asian, 3.4%

were black, and 3.1% were Hispanic [2]. I believe that we as educators and researchers have a responsibility to actively counteract these disparities. One way I have recently been working towards this goal is through my role as an organizer of an upcoming workshop at the Flatiron Institute. While not explicitly focused on DEI, the workshop is an opportunity to spotlight some of the excellent work accomplished by people of diverse backgrounds in the area. To accomplish this, I made a concerted effort to invite a varied group of speakers, over half of which were from diverse backgrounds. To go beyond representation alone, the workshop is structured to facilitate the formation of meaningful relationships through the allocation of time for discussion, collaboration, and social interaction. Through these efforts, I hope to both diversify the academic dialogue and to build a support system that can propel the next generation of diverse thought leaders in mathematics.

Future efforts

DEI is a broad and complex topic, and my past efforts have only touched on some of its many facets. As a professor and group leader, I plan to extend my work to promote DEI in several key ways.

Building a diverse research group. One direct avenue for impact as a professor is active participation in graduate admissions. I intend to proactively recruit a diverse cohort for my research group, welcoming students from all backgrounds including race, gender, sexual orientation, and socioeconomic status without compromising on academic excellence. A second avenue for impact is the targeted creation of research opportunities aimed at groups currently underrepresented in the field. By identifying prospective students in introductory undergraduate courses I teach, I plan to engage students early in their academic careers, increasing the likelihood of retention in mathematics. Drawing on my experience with AM-SURE, I plan to extend these opportunities to students from other institutions through summer research programs. By actively promoting diversity at both the undergraduate and graduate level, I aim to contribute to a more inclusive academic community.

Building an inclusive research group. I believe that one of the most powerful ways to influence DEI positively is not just to promote it myself, but to build a culture of advancing DEI within my lab. I intend to establish an inclusive environment that encourages respect, collaborative problem solving, and is welcoming to those with diverse backgrounds and life experiences. To promote a sense of collective responsibility for creating an inclusive academic environment, I also plan to help my students get involved early in their academic careers in DEI projects and committees within the department. To this end, I will regularly inform them of DEI-related events during my weekly group meetings, and will also suggest DEI topics for discussion. In doing so, I hope to increase familiarity among my students with the subject, inspiring them to positively impact our community.

Involvement with student groups. I recognize the impactful role that mentors play in the academic and personal growth of students. As I've addressed earlier, systemic biases have led to a scarcity of role models for underrepresented groups in computational fields, which can discourage members from persisting with their studies. While I understand that my impact as a white male mentor has inherent limitations, I intend to counteract this lack of representation by volunteering with student organizations focused on mentoring members of these groups, both within and outside the academic institution I join. By doing so, I hope to foster an environment where members of under-represented groups feel more supported, encouraged, and inspired to thrive.

References

[1] Amanda L Golbeck, Thomas H. Barr, and Colleen A. Rose. Report on the 2017-2018 New Doctorate Recipients. *Notices of the American Mathematical Society*, 67(8):1200–1206, 2018.

[2] Isabelle Rose I. Alberto et al. Who does the fairness in health AI community represent? *medRxiv*, 2023.