

# Experiences of Computing Students with Disabilities

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## ABSTRACT

Computing students with disabilities face a variety of difficulties in computing education and careers including inaccessible technology, difficulty arranging accommodations, attitudinal barriers, and a lack of mentors. This panel of computing students and recent graduates with disabilities will describe their experiences both in and out of the classroom. The goal is to provide the audience with an opportunity to hear first-hand how their educational needs were met as non-traditional computing students. In addition to the panelists' short presentations, the moderator will facilitate a dialog between the members of the audience and the panelists.

## CCS CONCEPTS

•**Social and professional topics**~User characteristics~**People with disabilities** •Social and professional topics~Professional topics~Computing education

## KEYWORDS

Education, Disability, Accessibility

## 1 Summary

Because of the 1975 Individuals with Disabilities Education Act (IDEA), the Rehabilitation Act of 1973, Section 504, and the Americans with Disabilities Act of 1990 (ADA) more and more students with disabilities are pursuing degrees in computing fields. As a result, teachers of computer science are more likely now than in the past to have a blind, low-vision deaf, hard of hearing, mobility disabled, or cognitively disabled students in

our classrooms and research labs.

And yet, we do not have systematic data about the representation of students with disabilities in postsecondary education [1] and many programming tools remain inaccessible to these students [2]. The purpose of this panel is for educators to learn first-hand from students about their educational needs and how they can be met.

## 2 Panel Structure

The panel will consist of four diverse students and recent graduates with disabilities moderated by Richard Ladner. The panelists will make 10-minute presentations that include the following:

- Demographic information: name, academic background, disability, and future goals.
- Description of accessibility needs in their computing classes and other academic activities, such as office hours and group projects.
- Description of how those needs were met at the university-, department-, and instructor-level.
- Description of any physical or attitudinal barriers that needed to be overcome.

Given the virtual format, these presentations and some initial Q&A between the moderator and panelists will be recorded. These initial questions could include:

- What advice would you give a faculty member for working with a student with a disability like yours?
- What are your experiences with team work in your classes?
- What access issues have you faced in postsecondary education?
- What types of accommodations do you receive? Which of these have you found most helpful?
- How do you communicate with faculty about your needs?

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After this, the moderator will solicit questions from the audience and encourage a dialog between the students and the audience. Throughout the session, we will encourage participants to make use of the chat for interactive discussion.

Those attending the panel will be provided resources from AccessComputing including:

- [20 Tips for Teaching an Accessible Online Course](#)
- [Online Learning Strategies for Students with Disabilities](#)
- [Equal Access: Universal Design \(UD\) of Instruction](#)
- [Equal Access: UD of Computing Departments](#)

### 3 AccessComputing

[AccessComputing](#), founded in 2006, is an NSF-funded Broadening Participation Alliance with the goal of increasing the participation of people with disabilities in computing education and careers. We work to foster institutional change to make computing departments and organizations more welcoming and accessible to students with disabilities. This is achieved through a large network of collaborators and partners at more than 60 institutions and organizations. We Since our inception, we have held many capacity building workshops for educators and administrators. One of the most effective ways to get the attention of workshop attendees is by having a panel of individuals with disabilities. Hearing these stories first-hand has had a huge impact on participants.

### 5 Panelists

**Caitlyn Seim** is a NIH Postdoctoral Fellow at Stanford University where she does research on wearable stimulation devices to improve limb function after stroke. She received her Ph.D. in Computing from the Georgia Institute of Technology in 2019, where her dissertation focused on wearable computing and motor skill training. She has been recognized for her work by the National Science Foundation, Microsoft Research and Google. Her research interests include technology-enabled methods in healthcare, rehabilitation, and human augmentation. She has had low vision since birth, which provides her with a unique perspective on physical challenges, stigma, and minority status.

**Ather Sharif** is dedicated to increasing the accessibility of information technology and the full participation of people with disabilities in computing. Ather is a third year Ph.D. student at the Paul G. Allen School of Computer Science and Engineering at the University of Washington, a Software Engineer at Comcast, and Founder of EvoX Labs, an initiative dedicated to bridging the gap between technology and people with disabilities. As a graduate student, Ather's research focuses on personalized designs and accessibility, and creating web systems that adapt to the unique abilities of the users as compared to the users adapting to the systems.

**Naba Rizvi** is a first year PhD student at the University of California San Diego in HCI. She graduated in 2020 from the University of Toledo with a B.S. Information Technology. Her research interests include: accessibility, natural language processing, human-computer interaction, and CS education. Naba is passionate about increasing diversity in the field of computing and fighting disparities in education & healthcare. She is a 2020 recipient of The NCWIT Collegiate Award and founder of Non-Traditional Techies, an organization with over 1700 members increasing socioeconomic diversity in tech by connecting passionate individuals from underprivileged backgrounds with technical opportunities.

**Abraham Glasser** is a Ph.D. student in Computing and Information Sciences at the Rochester Institute of Technology, and he is a researcher at the Center for Accessibility and Inclusion Research. He previously completed internships at Microsoft and NASA, and he has conducted research at the NTID Center on Access Technology and through several REU programs. He is the recipient of an Honorable Mention in the NSF Graduate Research Fellowship program, and he was the first-place winner in the Student Research Competition at the ACM CHI Conference and was awarded Best Poster at the ACM VRST Symposium. His research investigates technologies for people who are Deaf or Hard of Hearing, including captioning and automatic speech recognition.

### 6 Discussion

Panels at SIGCSE are quite varied, covering topics such as curriculum, diversity, policy, and opportunities. It is seldom that we get to hear our students' points of view. A powerful approach is to hear directly from the students. Attendees will expect to learn something new, not just boiler-plate from their university's office of disability services for students.

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### REFERENCES

- [1] Blaser, B. & Ladner, R. E. (2020). Why is Data on Disability So Hard to Collect and Understand? In proceedings from RESPECT '20: Research on Equity and Sustained Participation in Engineering, Computing, and Technology. IEEE Computer Society.
- [2] Stefik, A., Ladner, R. E., Allee, W., & Mealin, S. (2019). Computer science principles for teachers of blind and visually impaired students. In proceedings of SIGCSE '19: ACM Technical Symposium on Computer Science Education. <http://doi.org/10.1145/3287324.328745>