AccessComputing NEWS

from the Alliance for Access to Computing Careers

Increasing opportunities in computing for people with disabilities

January 2016

Continued Funding for AccessComputing

By Brianna Blaser, *AccessComputing* Coordinator

The National Science Foundation (NSF) has approved an additional investment of almost $4,000,000 in the *Alliance for Access to Computing Careers (AccessComputing)*, a series of projects they have funded for a decade, with a total investment of more than $8,000,000. With new funding, *AccessComputing* will continue its work to increase the number of people with disabilities successful in computing degree programs and careers, as well as increase the capacity of postsecondary institutions, employers, and other organizations to fully include people with disabilities in computing courses, programs, and on staff.

Two new co-PIs, Associate Professors Andrew Ko and Jacob Wobbrock from the UW Information School, join PI Richard Ladner and co-PI Sheryl Burgstahler. Andrew Ko directs the USE research group, which invents technologies that help people understand and overcome complex software.

(Story continues on page 2)

Highlights inside this issue:

Student Profile: Zane Hintzman 2
Involvement in Conferences 3
Two Books Published 4
Capacity Building Award 4
Teaching Accessibiltiy Initiative 5
AccessComputing PI Wins Two Awards 5
Student Profile: Kartik Sawney 6
Accessible University 3.0 7
AccessComputing Minigrants 8
About *AccessComputing* 8

Engage in *AccessComputing*

Students with disabilities:

- Internships
- E-mentoring
- *AccessComputing* Team

Educators & employers:

- Host an intern
- Communities of practice
- E-mentoring
- Presentations
- Minigrants

When more citizens have access to computing opportunities, and when computing fields are enhanced by the perspectives of people with disabilities, we all benefit.

Find more information about these opportunities as well as videos, publications, and other resources on the *AccessComputing* website, *www.uw.edu/accesscomputing*.

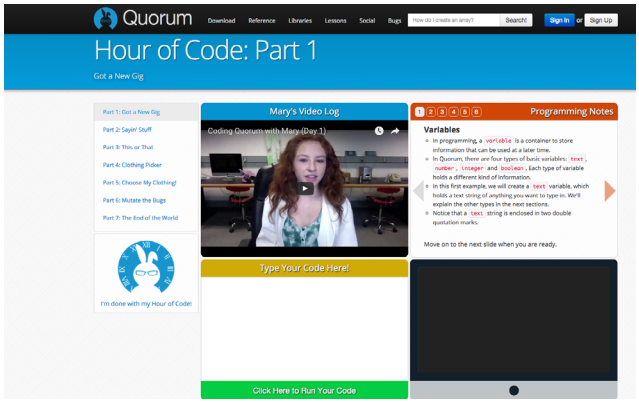
His interests span human-computer interaction (HCI), software engineering, and computing education. Jacob Wobbrock's expertise is in the field of HCI, where he conducts studies of people's interactions with technology and invent, design, and build new interactive technologies.

A diverse set of postsecondary institutions and computing organizations are *AccessComputing* partners. Students with disabilities engage in mentoring and professional development opportunities. A new group of industry affiliates is being formed, bringing greater focus on placing students with disabilities into computing careers after successfully completing their education. *AccessComputing* includes a new focus on how to integrate disability, accessibility, and universal design topics into computing curricula.

Quorum Included in Hour of Code

For the second year, students participating in code.org's Hour of Code can choose an accessible tutorial with a programming language called Quorum. The tutorial works with screenreaders and is therefore accessible for participants with visual impairments.

The Hour of Code is a global movement encouraging students to try coding for an hour, with no experience required. The lessons provide a short introduction to programming to K-12 students and has had over 100 million of participants; the Quorum tutorial has had over 28,000 since last December. Find the Quorum tutorial at *code.org/qrm*.



A screenshot of the Quorum Hour of Code.

Student Profile: Zane Hintzman

My name is Zane Hintzman, and I graduated from Carnegie Mellon University in 2015 with a B.S. in Computer Science. This summer, I participated in an internship with Disney Research in Pittsburgh. For my project, I worked on an interface for streaming data from a motion capture system and a radio frequency identification reader simultaneously. The goal of the project was to create a tool that could track people moving in a specified two dimensional region. The internship's main focus was to create a unified software environment that allowed multiple technologies to work together simultaneously.

I found out about the internship through an email that was sent to Computer Science majors at Carnegie Mellon University. I spoke to the contact for this opportunity, and he gave me a related project to work on over the summer.

I really enjoyed the overall experience. My project was interesting, and my mentor was really proud of my progress. I had a lot more interaction with my mentor than I have in previous internships. The Disney Research group also held many social events that allowed people at the offices to network.

I learned about many new technologies during my internship. For example, I learned how a motion capture system works, as well as how RFID readers work. I learned about the benefits and downsides to each kind of technology I used. Working on my project, I became more familiar with Visual Studio and the C# language.

I had a great experience working for Disney. This internship inspired me to be open to career options that use technologies I haven't had much experience with—I encourage other students to be open to working with new technology and learning new skills.

AccessComputing's Involvement in Diversity-related Conferences

By Richard E. Ladner, PI, and Brianna Blaser

AccessComputing works to make sure that topics related to disability are included in diversity-related computing conferences. Some of our efforts are described below.

RESPECT: The first annual Research on Equity and Sustained Participation in Engineering, Computing, and Technology (RESPECT) conference was held August 13-14, 2015 in Charlotte, NC. The conference was sponsored by the new IEEE Special Technical Community on Broadening Participation. The purpose of the conference is to promote and disseminate research in broadening participation in computing. Richard Ladner gave the first keynote titled "Accessibility and Beyond." He talked about meanings of disability and accessibility, and explained how research in accessibility has yielded advances in technology for everyone.

An interesting talk by Jane Stout focused on the benefits for deaf students found at specialized institutions such as Gallaudet University and the National Technical Institute for the Deaf at Rochester Institute of Technology. Other talks were about underrepresented minorities, women, and LGBTQ students at differing points in the education pipeline. The expectation is that the conference will be held annually and get larger as the number of people interested in broadening participation research grow.

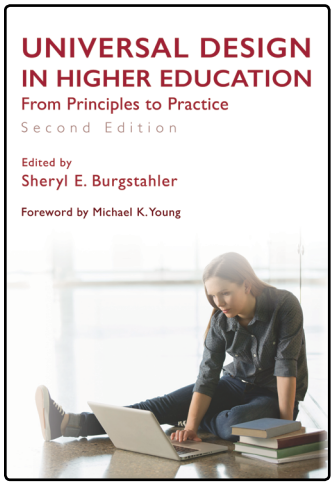
Tapia: *AccessComputing* also continues to be involved with the Tapia Celebration of Diversity in Computing held in Boston in February 2015. *AccessComputing* was a Silver Sponsor. *AccessComputing* partner Shaun Kane delivered a keynote on "Superhuman Computing: Designing Custom Software and Hardware Interfaces to Support Our Natural Abilities." Richard Ladner received the Richard A. Tapia Achievement Award for Scientific Scholarship, Civic Science and Diversifying Computing. In addition, we hosted a Birds of a Feather titled "Disability: Celebrating a Face of Diversity."

Grace Hopper: Finally, Brianna Blaser continues to represent *AccessComputing* on the Grace Hopper Celebration of Women in Computing Underrepresented Women in Computing (UWiC) Committee. In 2015, the committee organized a luncheon, speed networking session, and panel presentations focused on underrepresented women in computing, including women with disabilities *AccessComputing* Team Member and Microsoft employee Katie Sullivan spoke on a panel titled "Bringing Your Whole Self to Work." Several other Team Members attended Grace Hopper as well as the Tapia Celebration.

Learn about including people with disabilities in participatory design by reading Richard Ladner's *ACM Interactions* article, "Design for User Empowerment." *http://interactions.acm.org/archive/view/march-april-2015/design-for-user-empowerment*

Two New Books Published

By Sheryl Burgstahler, *AccessComputing* Co-PI



AccessComputing is excited to announce the publication of *Universal Design in Higher Education: From Principles to Practice*, edited by *AccessComputing* co-PI Sheryl Burgstahler. After thorough revision and the addition of new articles, this second edition addresses recent changes in law, technology, university policy, and practices, making it a comprehensive guide for creating inclusive college and university programs. It showcases practices for creating a campus environment that is welcoming, accessible, and usable. As more students with disabilities attend postsecondary educational institutions, universal design becomes a practical approach for educators to fully include these students.

As Stephan Smith, executive director of the Association on Higher Education And Disability, said: "Fresh, comprehensive, and engaging, *Universal Design in Higher Education* is expertly written, thoughtfully crafted, and a 'must-add' to your resource collection." To learn more about the book or order it online, visit the Harvard Publishing website. To order visit *www.uw.edu/doit/universal-design-higher-education-principles-practice-1*.

AccessComputing partner Professor Jonathan Lazar from Towson University also has a new book. *Ensuring Digital Accessibility Through Process and Policy* was published in July 2015. It looks at why digital accessibility is an important issue and offers best practices for implementing accessibility in a variety of settings including universities, companies, and government.

Richard Ladner, *AccessComputing* PI has said, "*Ensuring Digital Accessibility* is a wonderful explanation of why accessibility to all kinds of technology including computers, smartphones, e-books, and web sites, is so beneficial to society. Certainly the recipients of access benefit, but so do the providers of the information by reaching a wider and more diverse audience. Providing access to users with disabilities is not only the right thing to do, it is the smart thing to do."

Capacity Building Award: Valerie Taylor

Valerie Taylor, Senior Associate Dean for Academic Affairs and Royce E. Wisenbaker Professor of Computer Science and Engineering at Texas A&M University and Executive Director of the Center for Minorities and People with Disabilities in Information Technology (CMD-IT), has been awarded the *AccessComputing* Capacity Building Award.

Dr. Taylor is an influential voice in ensuring that individuals with disabilities are included in efforts to diversify computing fields. This includes recruiting individuals with disabilities to participate in the CMD-IT career development workshops and Grace Hopper Celebration of Women in Computing Underrepresented Women in Computing Committee's activities, and making disability a visible population at the Richard Tapia Celebration of Diversity in Computing.

Teaching Accessibility Initiative

By Richard E. Ladner

The Teaching Accessibility Initiative was created in 2015 to address the needs of the computing industry for developers, testers, program managers more familiar with accessibility. Their statement of principles and objectives includes the following.

"We believe that technology is integral to our culture, our society and our workplace and should be usable by everyone, regardless of their abilities or disabilities. While there has been progress in a variety of applications, standards and regulations, accessibility is still not systemic in the development of new and emerging technologies.

Today, knowledge of accessible development is limited to a handful of domain experts. To reach the goal of making technology accessible to everyone, we must broaden expertise across industry. Accessibility must become mainstream."

One of the first actions by the Initiative was to encourage industry to include knowledge of accessibility as part of job descriptions. To this end Adobe, Facebook, Google, LinkedIn, Twitter, Yahoo!, and several other companies have added language about knowledge of accessibility to their job descriptions. This pressure from industry will help influence computing departments to include accessibility in their courses.

AccessComputing is an active participant in the Initiative along with 27 other companies, organizations, and institutions. The goals of the Initiative coincide with our objective to increase the teaching of accessibility and universal design in computing courses. Visit the website *http://teachingaccessibility.com/* to learn more.

AccessComputing PI Wins Two Awards

By Brianna Blaser

AccessComputing PI Richard Ladner received two awards in 2015 related to his work broadening the participation of people with disabilities in computing fields. In January at the National Science Foundation's STEM-CP: Computing Education for the 21st Century PI Meeting, Richard received the Broadening Participation Community Award "in recognition of excellence and leadership in increasing access to computing for students with disabilities." At the meeting, Richard delivered a keynote address titled "Accessibility Is Not Enough."

At the Tapia Celebration of Computing in February, Richard received the Richard A. Tapia Achievement Award for Scientific Scholarship, Civic Science, and Diversifying Computing. He was honored "for his incredible commitment and contributions to the disability community in computing."

We're lucky to have Richard as a leader in *AccessComputing*'s efforts. Find more information about Richard's efforts at *www.geekwire.com/2014/disability-technology/*.

Student Profile: Kartik Sawney

I'm a junior at Stanford University, majoring in computer science and specializing in human computer interaction and artificial intelligence. This summer, I worked on the accessibility team within the operating systems group at Microsoft, developing a Windows service that would provide more feedback to the team, thereby helping improve the accessibility of their applications.

The application process started with a meeting with Microsoft's on-campus recruiter for Stanford. I expressed my interest in accessibility and talked about my prior experience. I flew to Microsoft's headquarters in Redmond, WA for a day of technical interviews. *AccessComputing* also connected me to a few contacts at the company, and their guidance proved very helpful in preparing for the interviews. While the interviews primarily tested my coding and design abilities, they were also an opportunity for me to learn about the team and the potential project that I would be working on. I particularly liked how the interviewers tried to keep the entire process interactive.

Even before the internship, I was invited to attend the company's Ability Summit, a two-day event where employees come together to develop solutions that can empower people with disabilities. This event left me highly impressed with Microsoft's commitment to diversity. I participated in the ability hackathon where I, along with two other developers, worked on a Yammer client that makes it much easier for screen reader users to interact with the application. Our project was recognized by the CEO, and he gave us some constructive feedback to further improve it. I also made it a point to network with current employees with disabilities at the company, and these connections later helped me a lot during the internship.

After getting the internship, I started ramping up on the technology that I would use for the project. The internship was designed in such a way that I was responsible for implementation, design, and testing. Design is something that I had never done before, so it was a challenge for me. The implementation phase took longer than expected, but it was a good learning experience to work through unexpected bugs and other issues in the development cycle. I also got an opportunity to review and play with existing Microsoft's internal code, which helped me better understand coding practices and standards in the industry. I learned more about UI automation (which is the cornerstone of accessibility at Microsoft) and applied several concepts I learned at school, such as concurrency control. Besides technical knowledge, I also gained a better appreciation for working in a corporate culture, and how that is different from a school environment. For instance, I would often spend a significant amount of time trying to resolve problems I encountered on my own by reading online documentation, but I soon realized how inefficient that was. With people around me who had first-hand experience with different types of technologies, it made more sense to schedule a short conversation with the concerned person and resolve issues quickly.

I actively participated in other events around the company. In particular, I was a part of the "deep vision" team in Oneweek, Microsoft's annual hackathon. My team developed an application that helps a blind person with indoor navigation, while also helping to instantly read and scan documents such as restaurant menus. Our project was selected as the best project in the Tech for Social Good category. It will be further improved and possibly shipped. Similarly, I also interacted

with other teams and helped them brainstorm ideas that could help people with disabilities. Interaction with other teams has inspired me to learn about natural language processing and helped me to secure a return offer for next summer.

My internship ended with a presentation of my work. The company plans on using my tool as a validation tool for accessibility, and I'm excited to see it's positive impact.

To secure an internship like this, I recommend applying early. The internship positions at big companies fill up quickly, and chances of getting in later decrease accordingly.

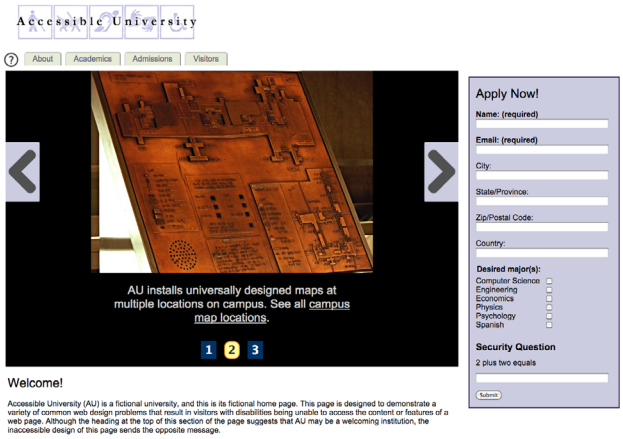
AccessComputing works with over 300 students with disabilities in computing fields. To learn more about how to join, go to *www.uw.edu/accesscomputing/get-involved*.

AccessComputing Unveils Accessible University 3.0

By Terrill Thompson, *AccessComputing* Technology Accessibility Specialist

The Accessible University (AU) demo site that I created and maintain features two versions of a home page for a fictitious university. The first version is an inaccessible version and includes at least 18 accessibility barriers. The second version is an accessible version and integrates solutions to each of the barriers presented in the first version. A third page lists and explains each of the barriers and solutions, and links to other resources for additional information.

AU was created as an instructional tool for helping web designers and developers and anyone else with an interest in web accessibility to learn about common web accessibility problems and solutions in an easy-to-understand way. AU has been widely used at trainings, presentations, and workshops on accessible web design.



A screenshot of Accessible University's accessible homepage.

AU was originally developed in 2002 as part of the *AccessIT* project at the University of Washington, with support from the National Institute on Disability and Rehabilitation Research of the U.S. Department of Education. Since then, it has been updated and maintained by *AccessComputing*.

The version 3.0 upgrade was unveiled in a presentation titled "Carousels, Dropdowns, and Modal Dialogs: Accessibility and Common Web Widgets" at the HighEdWeb conference in October 2015. The upgraded version includes many improvements and enhancements, including the discussion of the accessibility issues involved in the features listed in the presentation title. The HighEdWeb presentation was well attended and well received, and attendees specifically commented on how much they appreciated the interactive "Spot the Barrier" exercise using the AU demo site.

AU 3.0 is online at *http://uw.edu/accesscomputing/AU*. It is freely available for others to use and share for noncommercial purposes with proper attribution to *AccessComputing*. The source code is available at *https://github.com/terrill/AU/*.

AccessComputing Minigrants

By Lyla Crawford, *AccessComputing* Staff

Since 2006, *AccessComputing* has contributed funds to support computing- and information technology-related activities, training, and experiential learning opportunities nationwide. Funds have been used to expand existing computing events to involve students with disabilities, create new stand-alone events designed to attract students with disabilities into computing fields, and support professional development opportunities. We'd like to share some of the creative and exciting ways people from all over the country are working to increase the number of people with disabilities successfully pursuing computing careers.

Congratulations to the following recipients for conducting successful projects!

- Ather Sharif ran the evoHaX Special Edition hackathon. The hackathon had over 75 participants and focused on building wearable technologies that are accessible. The teams targeted a broader range of disabilities through collaboration between professional developers, students, therapists, and people with disabilities.
- The Empowering Blind Students in Science and Engineering workshop engaged 18 students and 16 mentors who are blind learn a variety of resources and mindfulness strategies to balance demanding course loads.
- Sherry Hahn, in collaboration with Andreas Stefik and Derrick Smith, hosted a workshop titled *Computer Programming Camp: Expanding Computer Science to Blind and Visually Impaired Students*. The camp was a hands-on workshop for middle and high school teachers designed to prepare educators to teach computer programming to students who are blind or visually impaired.
- Dr. Cydale C. Smith hosted the second annual Science, Art, and Health Symposium in Huntsville, Alabama. The event highlighted the connection between science and the arts. With participation from NASA, U.S. Army, local colleges and local companies, an estimated 500 on-site participants and 1,000 online participants (with over one third being students with disabilities) participated in activities such as the Kids-Hackathon.

I encourage you to consider applying for minigrant funds at *www.uw.edu/accesscomputing/apply-accesscomputing-minigrant*.

About *AccessComputing*

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