

THE CENTER FOR RESEARCH AND EDUCATION ON ACCESSIBLE TECHNOLOGY AND EXPERIENCES (CREATE)

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ABSTRACT

In an era of rapidly evolving technology and increasing interconnection, full participation in society depends on the successful use of technology. Thus, to ensure equity and participation for people with disabilities, technology must be accessible - we must create and adapt interactive systems to improve access to technology and to the world at large. **The University of Washington Center for Research and Education on Accessible Technology and Experiences (CREATE)** is dedicated to propelling accessible technology research and education from incremental improvements to paradigm-shifting breakthroughs that enable greater inclusion and participation for people of all abilities.

CREATE'S MISSION

It has been 30 years since the ADA passed, but the COVID-19 crisis vividly highlights that equal access to technology is not yet a reality. CREATE's mission is to make technology accessible and to make the world accessible through technology. By bringing together education, research, and translation expertise in one collaborative organization, CREATE will provide the infrastructure to catalyze progress on moonshot projects-challenges that require extended, multidisciplinary teams. CREATE's goal is to bridge the gap to fully supporting people with disabilities in achieving their goals by:

- Inventing the next generation of accessible technologies.
- Making sure that people with disabilities are included in the data driving today's world.
- Ensuring that our inventions land in the hands of the people we serve.
- Improving the presence of people with disabilities in education and the workforce.
- Centering the voices of people with disabilities in all of these efforts.

While research is a focus of CREATE, translation and representation are also at the heart of CREATE, and cross-campus collaboration is a core value. Translation is at the heart of CREATE, where research results and technologies are moved into the world to have the greatest possible impact on people with disabilities. We must provide pathways for translation and ensure diverse voices inform our innovations. Led by Anat Caspi, CREATE's Director for Translation, CREATE partners with the Taskar Center at the University of Washington to engage community partners, provide pathways for translation, and ensure diverse voices inform our innovations.

CREATE partners also include HuskyADAPT, the UW Access Technology Center, and UW Disability Studies, among others.

CREATE also has an educational mission, which aims to educate and empower the next generation of technology creators and managers to prioritize accessibility in their work, and to broaden participation in the workforce to include more people with disabilities. We have an active post doc program that welcomes applications (reach out to us at create-contact@uw.edu). This work addresses inequities due to class, race, and gender for people with disabilities, and includes research to understand and address barriers. Led by Richard Ladner, CREATE's Director for Education, the Center is leveraging its connections with organizations like DO-IT, AccessComputing, AccessEngineering, and TeachAccess to develop new courses and create pathways for more individuals with disabilities to pursue careers in technology and design.

CREATE RESEARCH

CREATE is dedicated to elevating and including people with disabilities. A core mantra of the disability movement is, "Nothing about us without us," yet too frequently in the world of computing this goal goes unmet. Technical advances often assume a certain set of abilities, limit customizability, fail to convey critical information, or fail to include people with disabilities as creators of technology. These are crosscutting problems that require expertise and innovation from the start, across a range of areas of computing. Some of the ambitious, visionary projects that CREATE is engaged in include:

- Print-on-demand hardware solutions specifically fabricated to an individual's needs, and tools that make "making" itself accessible.
- High-detail crowdsourced navigation systems that convey the accessibility of sidewalks, entrances, interior spaces and public transit for people with mobility and sensory impairments.
- Creating a new era of tools and processes for assessing the accessibility of mobile apps and devices, especially at scale, and building more accessible mobile apps and devices.
- Basic science that helps demonstrate the direct developmental benefits of accommodations that foreground agency and control for kids with disabilities (in collaboration with UW's Institute for Learning and Brain Science, ILABS).

We see this work as only a beginning, not an end. For example, we have begun to study the gaps created by accessibility research which fails to explicitly address the needs of minoritized communities. Similarly, we must begin to consider how software meets the needs of multiple people with disabilities who exist in the same space, address mental health and chronic illness, and consider disability's presence in spaces that are often overlooked, such as advanced degree programs.

In these and other CREATE projects, there is a deep need for technical innovation, and equal value in understanding the human impact: CREATE's projects are realized through a combination of big data, advanced software and hardware tools, artificial intelligence, sensing and modeling, human-computer interaction, robotics and—most importantly—a commitment to foregrounding the experiences of people with disabilities through inclusive and participatory design and community engagement.

ACKNOWLEDGMENTS



CREATE was founded by a team of 9 faculty. In addition to Jennifer Mankoff and Jacob Wobbrock (co-directors); Anat Caspi (Director for Translation); and Richard Ladner (Director for Education); the following faculty are core members of CREATE:

Heather Feldner, Assistant Professor, UW Medicine Rehabilitation Medicine: Physical Therapy; Core Faculty, Disability Studies; Affiliate Faculty, Center for Technology and Disability Studies Director, IMPACT Collaboratory.

Leah Findlater, Associate Professor, Human Centered Design & Engineering; Director, Inclusive Design Lab.

James Fogarty, Professor, Paul G. Allen School of Computer Science & Engineering.

Jon Froehlich, Associate Professor, Paul G. Allen School of Computer Science & Engineering.

Kat Steele, Albert S. Kobayashi Endowed Professor, Department of Mechanical Engineering; Director, Ability & Innovation Lab, <http://steelelab.me.uw.edu>; Co-Director, AMP Lab, <http://depts.washington.edu/amplify/>

ABOUT THE AUTHORS



Jennifer Mankoff, Co-Director, Richard E. Ladner Professor, Paul G. Allen School of Computer Science & Engineering; **Director**, Make4all Lab, make4all.org. Mankoff's research focuses on accessibility and fabrication technology. She has led the effort to better understand both clinical and DIY stakeholders in this process, and has developed better, more usable tools for production. Her work also encompasses access to STEM education and mobile devices.



Jacob O. Wobbrock, Co-Director, Professor, The Information School; **Director**, ACE Lab, <http://depts.washington.edu/ancelab/>. Wobbrock's research seeks to scientifically understand people's experience of computers and information, and to improve those experiences through design and engineering, especially for people with disabilities. His specific research topics include input & interaction techniques, human performance measurement & modeling, HCI research & design methods, mobile computing, and accessible computing.