TechSAge News
Fall 2025

Rehabilitation Engineering Research Center on Technologies to Support Aging among People with Long-Term Disabilities

Project Director: Laura A. Rice
Leadership Team: Jon A. Sanford, Wendy A. Rogers, Tracy L. Mitzner, & Elena T. Remillard

University of Illinois Urbana-Champaign, Georgia Institute of Technology, Georgia State University, & Person in Design

In this issue of TechSAge News, we look back at the past year to highlight achievements and updates from the Center. Learn more about our featured projects and staff, and catch up on the latest events, publications, and study opportunities.

YEAR IN REVIEW

2025 began with a busy start at the Assistive Technology Industry Association (ATiA) conference in Orlando, where Laura Rice, Wendy Rogers, & Jon Sanford teamed up with colleagues from two other NIDILRR-funded Rehab Engineering Research Centers (ENHANCE & TRACE) to host a pre-conference session on technology for aging with and without disability. There is now an established aging strand at the ATiA conference and Laura Rice is the co-advisor.

In spring, several team members travelled to Toronto, Canada to present at the HFES International Symposium on Human Factors and Ergonomics in Health Care. This year's conference included a new Robotics Summit with presentations and dialogue on challenges in the future of robotics-based patient care. Presenters included Maria Lusardi, Elena Remillard, Jon Sanford, Kainat Shahid, and Wendy Rogers.

We held our annual TechSAge Advisory Board Meeting at the Illini Center in Chicago in May. The meeting centered on our key research themes of telehealth, robotics, and Artificial Intelligence (AI). Project teams shared their latest project updates and board members provided valuable feedback on navigating challenges and opportunities to expand knowledge and technology transfer. The board meeting coincided with RehabWeek in Chicago, where several team members presented work at RESNA (Rehabilitation Engineering and Assistive Technology Society of North America).

Fall was filled with TechSAge activities on campus and in the community. The McKechnie Family LIFE Home, Illinois' cutting-edge research center focused on innovations in home environments, held its biannual open house. Attracting over 100 visitors from the Champaign-Urbana community, the event showcased the interdisciplinary research taking place at the home, including our soft robotic showerhead (SoRoSh), and wayfinding robot (WayBot).

The Tele Tai Chi team deployed their first community-based program at The Active Life Senior Center in LaGrange, GA. They developed a custom technology configuration (big screen TV, AI-tracking webcam, microphone, and speakers) and technology support materials to enable a remote instructor to teach an in-person class.

TechSAge had a strong presence at the 2025 Gerontological Society of America Annual Scientific Meeting in Boston, M.A. TechSAge hosted a symposium on mHealth innovation. Jon Sanford and Wendy Rogers gave invented presentations on their career paths in gerontology sponsored by the student group in Social Research, Policy, and Practice. With several other posters and presentations, it was a great opportunity to re-connect with colleagues, exchange ideas, learn, and share our work.

PROJECT SPOTLIGHT

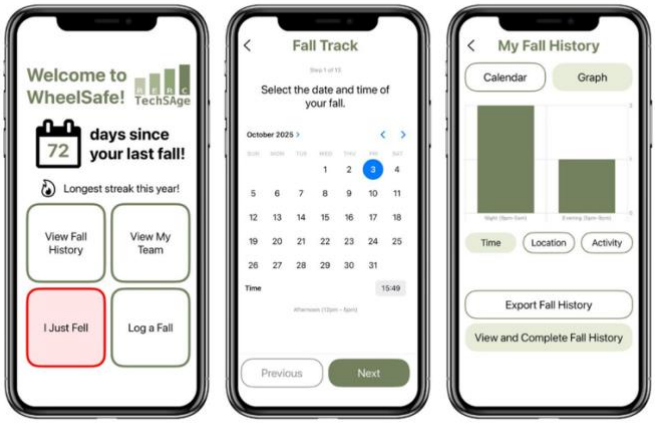
WheelSafe

There's a common misconception that people who use wheelchairs are not at risk of falls. TechSAge investigator Laura Rice says, "A lot of people think once a person begins using a wheelchair, there's less of an issue related to falls, and we don't need to worry about falls anymore." Research by Laura Rice, Assoc. Professor of Health and Kinesiology at the University of Illinois Urbana-Champaign, and others have shown that falls are very common among wheelchair users, and many people need assistance to recover.

Unfortunately, existing fall detection and alert systems that can alert others who can provide assistance are designed for people who are ambulatory and fail to meet the needs of this population. In fact, TechSAge researchers found that Apple Watch's built-in fall detection feature was **95% ineffective** in detecting falls from wheelchairs (read the paper). To address this need, Dr. Rice and her team in the Disability Participation and Quality of Life (DPQOL) lab are developing WheelSafe – a system to accurately detect wheelchair falls that can enable users to quickly notify a preferred care partner in the event of a fall.

Over the last 8 years, the team has been working to design and refine the fall detection system. Early interviews with target users suggested they preferred a wearable device, specifically a watch, that is conservative and sleek and enables them to choose who is notified in the event of a fall. To measure patterns of falls from a wheelchair, student researchers had the fun task of gearing up with accelerometers, helmets, elbow pads, and knee pads to do controlled falls in the lab. Through this research, they confirmed the wrist to be the most accurate location for a wearable accelerometer. Team members at Georgia Tech have been working to refine the fall detection algorithm and develop applications for both Android and Apple smart watches and phones.

WheelSafe integrates the watch with an app that enables users to track their personal information about falls, including their frequency and circumstances, on their phone. This information, which is often not documented or easily recalled, can be helpful to individuals, their families, and care providers to understand fall risk and help prevent future falls. The screenshots of the WheelSafe app below demonstrate how users can log details about a fall and view their fall history. WheelSafe is now available for Beta testers on both Apple and Android platforms.



Story by Patrick Pekala & Elena Remillard

FEATURED ARTICLE

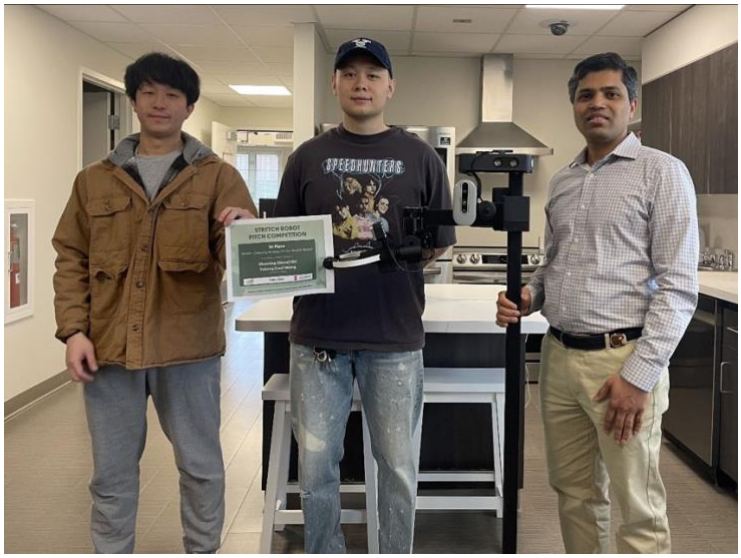
Understanding Everyday Challenges of Aging with Disability Through Lived Experiences

A new TechSAge article in *The Gerontologist* explores and compares the everyday challenges of older adults with long-term vision, hearing, and mobility disabilities. Analyzing in-depth qualitative data from the Aging Concerns, Challenges, and Everyday Solution Strategies (ACCESS) study, the researchers identified trends about types of activities that are most difficult as well as challenges that are shared and distinct across groups. These analyses highlighted opportunities for technology innovations and interventions to support this understudied population. Read the open-access article by Lyndsie Koon, Elena Remillard, and Wendy Rogers.

STRETCH ROBOT PITCH COMPETITION

In Fall 2024, we hosted our third Stretch Robot Pitch Competition in collaboration with Hello Robot. The competition at Illinois sought innovative hardware or software solutions to support individuals aging with disabilities by using the Stretch robot. Developed by Hello Robot, Stretch is an open source mobile manipulator with reaching, grasping, and sensing capabilities to support people with a wide range of tasks. Students submitted a brief proposal and pitch video that detailed their concept for Stretch and how it addressed a need for individuals aging with disabilities. Undergraduate and graduate students, representing a wide range of disciplines, submitted novel ideas for Stretch to support this population.

First place was awarded to Shuoning (Stone) Shi & Yuheng (Leo) Wang, School of Art & Design for HYGI+. The concept is an innovative cleaning module with a vacuum, motorized brushes, and a waste disposal module that integrates with Stretch's existing hardware and software. Watch the pitch videos for the winning team and honorable mentions here. Read the full news story here. In the spring semester of 2025, the winning team had the opportunity to work with Harshal Mahajan at the McKechnie Family LIFE Home to further develop their ideas.



The 2025 Stretch Robot Pitch Competition just concluded at Georgia Tech. Stay tuned for the winning team to be announced!

2025 GRADUATES

"The most rewarding part of my TechSAge experience was working closely with individuals with disabilities and learning from their resilience. Observing how they creatively adapt daily tasks taught me that independence isn't about doing everything alone, it's about recognizing one's strengths, and knowing when to seek support." – Tooba Umar

"Overall, my experience at TechSAge helped me grow as a science communicator…I enjoyed making complex research easier for the public to understand. It inspired me to keep working in this field."
- Xingyi (Ella) Chen

AWARDS AND RECOGNITIONS

Sutanuka Bhattacharjya (Asst. Professor Occupational Therapy, Georgia State University) and colleagues at GSU and the University of Buffalo have been awarded a $750,000 grant from NIDILRR for "Evaluating home-based technology for self-managing upper extremity rehabilitation at home by individuals with stroke". Read the **news story**.

Katherine Hsieh (Asst. Professor Occupational Therapy, Georgia State University) was awarded a $1 million grant from the U.S. Department of Veterans Affairs (VA) to study whether cognitive training along with exercise can help reduce the risk of falls in older adults with multiple sclerosis. Read the news story.

Tejasvi Manoj is a high school student actively working to protect older adults from online threats and scams through her company Shield Seniors. Tejasvi pursued an internship with TechSAge to learn more about technology research & design for older adults. She met with entire leadership team to present her ideas and get feedback and worked with Laura Rice as she developed her ideas further... and now she is TIME Magazine's Kid of the Year. Inspiring the next generation of researchers focused on the intersection of aging and disabilities is a core aspect of the TechSAge training mission

To learn more about Tejasvi's work, watch her TED TALK.

STAFF SPOTLIGHTS

Ana Morley is an Occupational Therapy Doctoral student at Georgia State University. As a research assistant on the Smart Bathroom project, she supports participant trials of toilet and tub transfers exploring optimal grab bar positioning. Anna is actively involved with recruitment, data collection, and observational analysis. She hopes to work in neuro rehab in the future. Fun fact: Anna traveled to India last year for an OT study abroad program.

Michael Boyce is a Human Factors Scientist who leads Boyce Human Performance LLC, advising on human factors, ergonomics, and systems design for healthcare, technology, and accessibility initiatives. As a consultant on TechSAge, Michael is providing research and statistics support to the Disability & Aging & Working Needs and the Telewellness projects. He is also contributing his expertise on human-robot interaction to the design of SoRoSH, a robotic showerhead for people aging with mobility disabilities. Fun fact: Michael is an avid seated salsa dancer

PRESENTATIONS AND EVENTS

Rehabilitation Engineering and Assistive Technology Society of North America
(RESNA)
Chicago, Illinois

- Technology Needs for Users Aging with Disability: Subject Matter Expert Insights on Understudied Groups (Elena Remillard & Megan Nickrent)
- Smart and Robotic Innovative Technology To Support People Aging with Disability (Laura Rice, Brian Jones, Katie Driggs-Campbell, Ian Rice, Maria Lusardi)

Gerontological Society of America (GSA)
Boston, MA

- mHealth Innovation for Aging With Mobility Disability Symposium (Elena Remillard, Tracy Mitzner, Laura Rice, Katherine Hsieh, and Eric Levitan as Discussant)
- The Long and Winding Road: My Journey Designing Technology to Support Successful Aging (Wendy Rogers)
- What's an Architect Doing in a Place Like This?…My Journey From Form to Function to Facilitate Aging in Place (Jon Sanford)
- Designing for the Intersection of Aging and Disability (Laura Rice)
- Wisdom in Older Adults Aging with a Mobility Disability (Hye Soo Lee)
- Strengthening Community-University Engagement at Illinois to Support Aging and Disability (Carrie Wennerdahl)
- Subject Matter Expert Insights for Engaging Underrepresented Older Adults with Disabilities in Research (Elena Remillard)

Assistive Technology Industry Association
(ATiA)
Orlando, Florida

- Pre-Conference Workshop: Technologies to Support Engagement for Adults Aging with and without Disabilities (Laura Rice, Wendy Rogers, Jon Sanford, Sara Czaja, Walter Boot, Neil Charness, & Amanda Lazar)
- Supporting Aging with Long-Term Disabilities: TechSAge Research Development. (Laura Rice, Jaewon Kang, Ian Rice, Jon Sanford, & Wendy Rogers)

International Symposium on Human Factors and Ergonomics in Health Care
Toronto, Canada

- Potential for Robots to Assist People with Vision Impairments with Orientation and Mobility (Maria Lusardi, Mimi Trinh, Jude Chinyere Okoro, Yao-Lin Tsai, John Pohovey, Anjali Ramesh, Samuel Olatunji, Wendy Rogers, Katherine Driggs-Campbell)
- Transfer Technologies that Adjust to User Needs as an Approach to Patient Safety (Jon Sanford)
- Tele Tai Chi: Insights From Older Adults with Mobility Disabilities on Using Zoom for a Virtual Exercise Program (Elena Remillard)
- Understanding the Needs of Individuals Aging with Multiple Sclerosis to Guide the Design of Assistive Technologies (Pallabi Bhowmick, Kainat Shahid, Wendy Rogers, Ian Rice)

PARTICIPANT SPOTLIGHT

Carol Crumby

Carol Crumby contracted Polio as a child which led to significant mobility challenges. Growing up using crutches and leg braces, she was adamant about doing “everyday kid things” and ultimately learned how to ride a bike and even roller skate. As an older adult, she has had to navigate new challenges related to post-polio syndrome, including fatigue, the inability to move as quickly, and risk of falling.

As someone aging with long-term mobility challenges, Carol has been an enthusiastic participant in TechSAge research, including the Tele Tai Chi and ACCESS User Needs studies. “What I learned about myself through all these research activities has been very helpful. Being able to talk about my mobility issues, what’s working, what’s not…I can share that with my family and friends to make them more aware of the kind of issues I may be going through”. Carol has also enjoyed learning from the Georgia Tech Tools for Life team about all the different ‘picker-upper’ devices she can use to make life a little bit easier.

When asked why she feels it is important to participate in research, Carol shared: “People need to know what can help improve a situation, both physical and mental, and work toward discoveries that can help make life better. For the researchers, please keep going! It helps us and helps our families too!”

Carol is a 30-year resident of Georgia who resides in Scottdale. Her career included work for the federal government (Environmental Protection Agency) and non-profits (United Way, Area Director for Dekalb County). Her background is in Education and Public Administration. She is an active member of the Atlanta Post-Polio Association.

Story by Elena Remillard

PARTICIPANT REGISTRY

Are you an older adult with a vision, hearing, or mobility disability?
We want to hear from you!

Join the Participant Registry!

Be part of a network of 600+ people who support technology innovation!
Participate in: Surveys, Interviews, Focus groups, Technology testing, and more.
Flexible locations: online, by phone, in person. Opportunities for compensation!

Take 5 minutes to sign up here: **TechSAge Participant Registry Survey.** If you prefer to complete by phone, please call (217) 300-1173 or email us: techsage@illinois.edu

Join the Participant Registry

MEDIA FEATURES

- American Association on Health and Disability (August, 2025) e-newsletter. Newsletter featured a spotlight on TechSAge RERC, the TechSAge Participant Registry, and select projects. It was distributed their list of 4800+ subscribers, including public health professionals, CIL staff, advocates, researchers, and community members. https://conta.cc/40AHhQV
- Dr. Lam Tai Chi for Health Newsletter (2025, October). Issue highlights TechSAge Tele Tai Chi Program publication and community deployment https://mailchi.mp/tchi/dr-paul-lam-tai-chi-for-health-newsletter-oct-2025?e=194d3129ff
- Illinois College of Applied Health Science (2025, May). 'Study shows smart home technology to be beneficial for aging in place' article highlights TechSAge Digital Assistance in a Box study.https://ahs.illinois.edu/study-shows-smart-home-technology-to-be-beneficial-for-aging-in-place/
- Center for Inclusive Design and Innovation (2025, March) Access Granted. "The Research at the Intersection of Disability and Aging" highlights TechSAge user needs research and Tele Tai Chi study https://cidi.gatech.edu/feature/access-granted-research-intersection-disability-and-aging
- Kansas Alumni Magazine (Fall 2024). Issue highlights Kansas researcher Lyndsie Koon's effort to improve health and fitness for people with disabilities. https://kansasalumnimagazine.org/wp-content/uploads/2024/12/Kansas-Alumni-magazine-fall-2024.pdf

SELECT PUBLICATIONS

- Hsieh, K. L., Backus, D., Willingham, T. B., & Sanford, J. (2025). Development and Usability of MSafe: A Fall Risk Application for Older Adults with Multiple Sclerosis. *Sensors, 25*(22), 7075. https://doi.org/10.3390/s25227075
- Kang, J., Zanotto, A., Snyder, M., Sosnoff, J., & Rice, L. A. (2025). Clinicians' perspectives on the usability and usefulness of an mHealth fall risk assessment for individuals who use wheelchairs: a pilot study. *Disability and Rehabilitation: Assistive Technology*, 1–12. https://doi.org/10.1080/17483107.2025.2595231
- Shende, S. A., Koon, L. M., Singleton, J. L., & Rogers, W. A. (2025). Everyday challenges and solutions for individuals aging with Deafness. *Innovation in Aging*. https://doi.org/10.1093/geroni/igaf071
- Remillard, E.T., Mitzner, T.L. & Mumma, K.T. (2025). TechSAge Tele Tai Chi for People Aging with Mobility Disabilities: Rationale, Methods, and Baseline Characteristics. Contemporary *Clinical Trials Communications, 47*, https://doi.org/10.1016/j.conctc.2025.101543
- Mitzner, T. L., Blocker, K. A., & Rogers, W A. (2025). "Alexa, how do I...?": Older adults learning to use digital home assistants. Gerontechnology, 24(1), 1-13.https://doi.org/10.4017/gt.2025.24.1.1199.08
- Rice, L.A., Mitzner, T.L., Sanford, J.A., Remillard, E.T., Rogers, W.A. (2025). Designing for the Intersection of Aging and Disability: Application of the TechSAge Technology Intervention Model. *The Gerontologist, 65*(7). https://doi.org/10.1093/geront/gnaf109

All publications are available upon request.

STUDY OPPORTUNITIES

Aging Concerns, Challenges, and Everyday Solution Strategies (ACCESS)

We are conducting a study that explores the everyday activities and challenges among older adults with long-term vision, hearing, or mobility difficulties. Participation involves: an interview completed via Zoom or phone (1-1.5 hours) and questionnaires (30-45 minutes).

Participants must:
Must be 60+
Be able to complete an interview in English via phone or Zoom (video call)
Have had vision, mobility, or hearing difficulty for at least 10 years that affects performance of daily living activities

Compensation: $50 Amazon e-code (or check)
For full details, see individual study flyers:

Vision

Hearing

Mobility

For more information, please email access-study@illinois.edu or call at: (217) 265-0150 (voice call)

Research Study on Smart Bathroom Technologies

We are conducting a study to evaluate an innovative Smart Bathroom system designed to facilitate safe transfers. Participation includes measurements of gait, balance, and strength, as well as completing a series of simulated transfers (with clothing on) on and off the toilet and/or in and out of the tub or shower.

Participants must:
Be 18–89 years old
Speak English
Be able to walk 20 feet independently (with or without a walking aid)
Be able to sit and stand without caregiver assistance
Live in the metro-Atlanta area

$50 Compensation

For more information: Click here for study flyer or contact sbhattacharjya@gsu.edu or (404)413-1449

Research Study on WheelSafe Fall Detection and Management System

We are conducting a study to evaluate the efficacy of WheelSafe, a fall detection and management system specifically designed for older adults who use wheelchairs or scooters full-time. Participation involves utilizing the device for 12 weeks to provide feedback on its functionality, as well as participating in focus groups to gather input about user needs and desired features.

Participants must:
Be 18 years or older
Use wheelchairs/scooters (for device testing)
Care partners of wheelchair/scooter users (for focus group discussions)
*Open to participants nationwide

$60 Compensation (for device testing) or $50 Compensation (for focus group discussions)

For more information: Contact dpqol-lab@illinois.edu or visit project page.

UPCOMING EVENTS

Assistive Technology Industry Association (ATiA) 2026

- January 29 - 31, 2026 in Orlando, FL
- Pre-conference session: Supporting the Needs of Older Adults Aging with Disability through Technology (flyer below). This session will provide participants an opportunity to gain an in-depth understanding of the needs of older adults aging with disabilities, develop skills to effectively meet those needs, and become familiar with current and emerging technologies that support older adults aging with disabilities. More information.

International Society for Gerontechnology 15th World Conference

- March 26-29, 2026 in Vancouver, BC, Canada.
- Keynote Speaker: Jon Sanford

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For more information on TechSAge, visit our website: **www.TechSAgeRERC.org**

Rehabilitation Engineering Research Center on Technologies to Support Aging among People with Long-Term Disabilities (RERC TechSAge). TechSAge is funded by grants (#90REGE0021 and #90REGE0006-01-00) from the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR), a Center in the Administration for Community Living (ACL), Department of Health and Human Services (HHS).