

## Rehabilitation Engineering Research Center on Technologies to Support Aging-in-Place for People with Long-Term Disabilities

TechSage Project Directors: **Jon A. Sanford, M. Arch** | **Wendy A. Rogers, Ph.D.** | **Tracy L. Mitzner, Ph.D.**



Group photos of the TechSage team at Georgia Tech (left) and UIUC (right) following the center's kick-off meeting last October.

### THE YEAR IN REVIEW

In October of 2018, TechSage was awarded the 5 year, \$4.6 million renewal grant from the National Institute on Disability, Independent Living, and Rehabilitation (NIDILRR) to continue research, development and training efforts to support people aging with long term disabilities. The second phase of the grant (TechSage 2) brought about several changes to the Center, including new collaborations, a website, and social media.

The grant represents the second phase of the RERC with continued collaboration from co-directors Jon Sanford and Tracy Mitzner at Georgia Tech, and Wendy Rogers at the University of Illinois at Urbana-Champaign (formerly a professor in Georgia Tech's School of Psychology). Bringing together complementary research expertise at both schools, the center integrates new, innovative projects with expansions of the most promising work from the first cycle. Researchers continue to explore technology user needs and applications in-depth, with emphasis in the areas of tele-exercise, fall prevention, and smart and connected home technologies.

The new grant enabled the development of our new and improved website ([www.rerctechnsage.org](http://www.rerctechnsage.org)), which serves as a dynamic hub for TechSage happenings. Visit our site for the latest publications, project updates, staff spotlights, study opportunities, and more! In addition, you can now follow us on [Twitter](#), [Facebook](#), and [LinkedIn](#).

### OUR MISSION

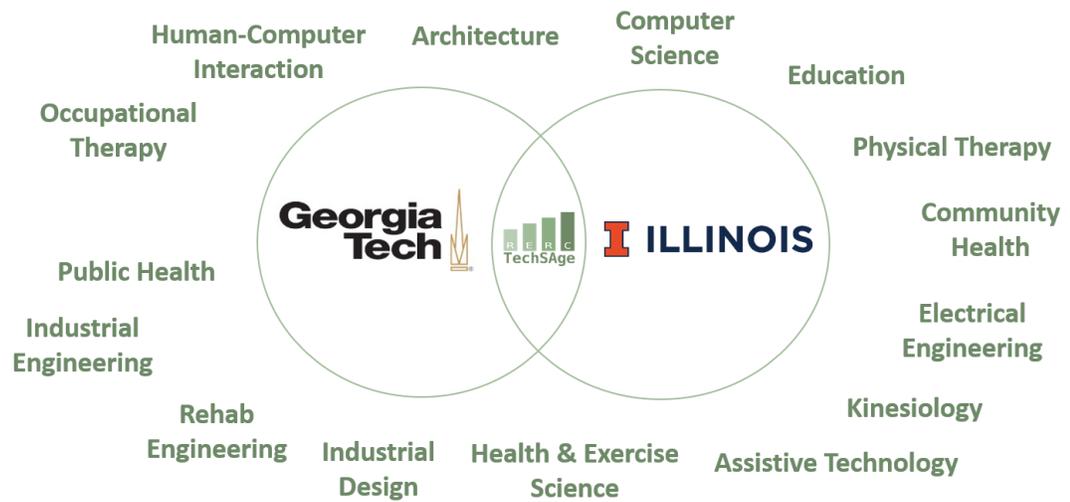
- to support and empower people with chronic conditions and long-term impairments to age-in-place
- through increasing knowledge about, availability of, and access to effective design and technologies
- that enable individuals to sustain independence; maintain health; engage safely in basic activities at home and in the community; and fully participate in society.

Follow us on social media:



## Problem solving through interdisciplinary collaboration

Team members represent diverse and complimentary disciplines coming together to understand and address the unique needs of people aging with long-term disabilities. Disciplines across and within each university site are pictured here.



## PROJECT SPOTLIGHTS

### “Alexa, open the door”: Using voice-first technologies to unlock independence at home.

TechSage researchers in the [Voice-Activated Digital Home Assistants project](#) are developing and testing a series of new skills for Amazon Alexa designed specifically to support people aging with mobility disabilities at home. Led by PIs Lyndsie Koon & R.S. Sreenivas, the project team is integrating Alexa’s voice command capabilities with a variety of smart home technologies, from robotic vacuums to smart lightbulbs.

Currently, efforts are focused on the August Lock, an automatic door lock that used in combination with Alexa, could help older adults with limited mobility answer the door in a timely manner, without having to physically do it themselves, thus reducing the risk of falls. All of the Alexa-enabled technologies the TechSage team is working on will go through rigorous testing and will be included in an instructional protocol, to help users learn how to use digital assistants.

We want to know how digital assistants help you become more independent! Tag us on any social media platform using **#myindependence** and let us know!

**Research participants needed:** We are seeking study participants to help understand perceptions & opinions about using of digital assistants at home.

[Learn more about the project at rerctechnsage.org](http://www.rerctechnsage.org)



Digital assistants like the Amazon Alexa help our participants with home-independence.



A participant transfers from his walker to the SmartBathroom toilet.

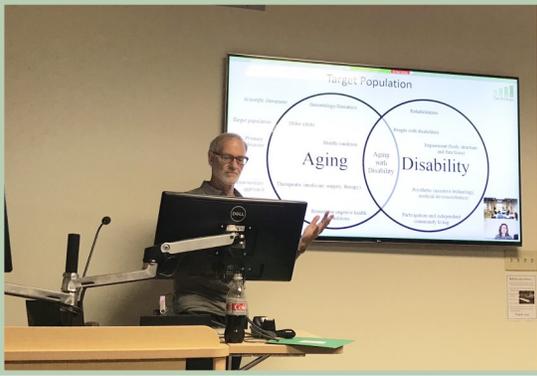
### Creating the bathroom of the future

Principal Investigators Brian Jones & Jon Sanford are challenging existing norms for bathroom “accessibility”. Going beyond ADA (Americans with Disabilities Act) guidelines that primarily focus on the presence of fixed features like grab bars and raised toilet seats, the team is developing smart, adjustable concepts that can meet an individual’s unique support needs.

At the SmartBathroom laboratory, located at Georgia Tech’s Aware Home, researchers are currently evaluating the SmartToilet system, with mechanically adjustable grab bars and a toilet, and developing components for the new SmartBathing Transfer System to measure an individual’s ability to get in and out of the shower or bathtub.

**Research participants needed:** We are seeking individuals ages 55+ who have difficulty performing transfers to evaluate our smart toilet system.

## FEATURED ARTICLE



Co-Director Jon Sanford discusses the historic divide between aging & disability paradigms and how they are integrated in the TechSAGE Aging and Disability model.

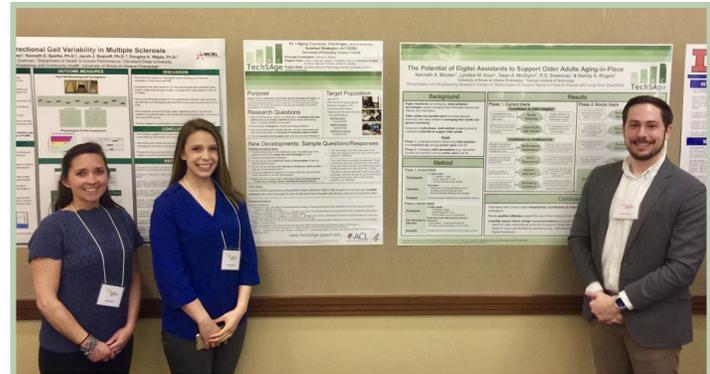
In the article, "Closing the Capacity-Ability Gap: Using Technology to Support Aging with Disability", TechSAGE co-directors, Tracy Mitzner, Wendy Rogers, and Jon Sanford introduce the TechSAGE Aging and Disability Model. Incorporating models from both aging and disability literatures, the TechSAGE Aging and Disability Model conceptualizes the potentially differing circumstances and support needs of people who are aging into disability versus people who are aging with a long-term disability. Researchers also introduce The TechSAGE Technology Intervention Model, specifically designed to provide direction for technology interventions for this population. Read the full article featured in [Innovation in Aging](#).



This April, TechSAGE participated in the inaugural Multiple Sclerosis (MS) Research Day at Illinois. Coordinated by TechSAGE Investigator Jake Sosnoff, the event brought together a wide range of stakeholders including

industry, researchers, students and persons with MS. The conference served as the first public announcement of the Illinois MS Research Collaborative, aimed at harnessing the university's collective expertise in this area for future MS research. TechSAGE team members from both Illinois & GT attended the conference, presenting 4 posters and hosting an industry dinner event.

## MS RESEARCH DAY



TechSAGE researchers Lyndsie Koon and Elena Remillard, alongside Kenneth Blocker (graduate student), present posters at Illinois Multiple Sclerosis (MS) Research Day.

## ADVISORY BOARD MEETING

We hosted our annual [advisory board meeting](#) April 29-30th at the Center for Inclusive Design and Innovation at the Georgia Institute of Technology. This meeting served as an opportunity to present the progress of TechSAGE projects in the past year and to benefit from the advisory board's expertise in discussing future directions for TechSAGE. The meeting was a huge success and was enjoyed by all who attended. A special thanks to our advisory board for their time and feedback!



Advisory board members discuss one of the TechSAGE projects during a workshop at the TechSAGE Advisory Board Meeting this past April.



## EASTER SEALS PODCAST

TechSAGE was recently featured on an episode of Easter Seal's Assistive Technology Update. Join Carolyn Phillips & Liz Persaud for a conversation on Universal Design, the IoT (Internet of Things), and the latest TechSAGE happenings in the first episode of our podcast series. Episode 430 is available on iTunes, Stitcher Radio, and on the [Easter Seals Assistive Technology](#) services website.

## TEAM SPOTLIGHTS



**Justin Phillips** and **Sofi Soto** are Communications and Social Media Interns at TechSage. Both Business students at Georgia Tech with a concentration in marketing, they co-manage TechSage's presence on Twitter, Facebook, and LinkedIn, and assist with website updates. They also contributed

content to the current newsletter, which we hope to be the first of many. In his spare time, Justin enjoys spending time with friends and family, running, shopping, photography, as well as brunches and dinners out. Sofi enjoys embroidering, baking, and spending time with friends, and loves to upcycle thrifted clothes.



**Jacob Sosnoff** is the principal investigator of the Steady Wheels project. His professional background and training are in motor control and gerontology. His current research focuses on predictors, consequences, and prevention of walking, mobility and balance impairments in clinical populations including individuals with multiple sclerosis, spinal cord injury, and older adults. He is also founder and Director of the Illini Fall Prevention Clinic at the University of Illinois. Outside of his research, Jake enjoys family time with his wife, three sons, and pet dogs.

## RECOGNITIONS & AWARDS



**Wendy Rogers** (Co-Director) named 2018 Woman Mentor of the Year from the Human Factors and

Ergonomics Society recognizing "outstanding contributions made by an individual in the mentorship and professional advancement of women within the Human Factors community".



**Beth Mynatt** (Advisory Board member) is part of the newest class to receive Regents'

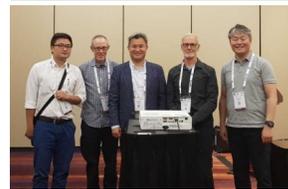
recognition from the University System of Georgia. Regents' Professorships represent the USG's highest academic and research recognition.



**Jon Sanford** (Co-Director) and **Patty Griffiths** (investigator) were named fellows of the

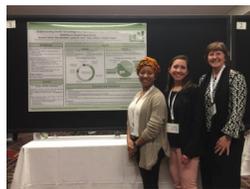
Gerontological Society of America (GSA) at the 2018 annual scientific conference in Boston, MA.

## PRESENTATIONS



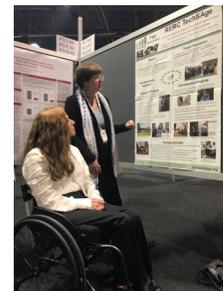
**Rehab Week - Co-Director Jon Sanford** (pictured 2<sup>nd</sup> from right) participated in a panel on

assistive care robots in Asia, Europe, and North America that discussed international perspectives on, and advances with, autonomous assistance. The conference took place in Toronto Canada.



**Human Factors and Ergonomics Society Health Care Symposium - Maurita Harris** (graduate student), **Lyndsie Koon** (Principal Investigator), and **Wendy Rogers** (Co-

Director & Principal Investigator), presented TechSage findings on health technology challenges for older adults with mobility or visual impairments at this year's conference in Chicago, IL.



**International Association of Gerontology and Geriatrics European Region (IAGG\_ER) Conference - Co-Director Wendy Rogers** traveled to Gothenburg Sweden to attend the conference, where she presented an overview of TechSage activities to an audience of researchers from Europe and beyond,

including Pamela Lindgren, Ph.D. student at Chalmers University of Technology (pictured here).

## PARTICIPANT SPOTLIGHT



Janie Yorker has been participating in Georgia Tech and TechSage studies since she was a student at Atlanta's Center for Visually Impaired (CVI) in 2006. She feels that being a visually impaired person herself can help future clients and innovations in accessible equipment.

As a self-proclaimed "technology dinosaur", she has been able to learn about a variety of skills and technology, including mobility training with her cane.

When asked what she enjoys about participating in TechSage studies, Janie said "I enjoy meeting the people... and it's like taking a healthy risk... in the sense that there's not always a right or wrong [answer], it's helpful information for people doing the projects."

"If I can help in that way, then I enjoy doing it. And it helps me too, it educates me, so it's twofold I think."

TechSage wants to know what you think would make technology better! Janie thinks that bigger and audible signage would improve her pedestrian experience, and that studying accessibility when someone's out and about would help a lot. Tag @TechSAGE on social media or use the hashtag **#myindependence** and let us know what everyday issues you think technology could improve!

## CUTTING EDGE LIFE HOME UNDER CONSTRUCTION



(top) A rendering of the future 5,670 sq. ft. LIFE Home building.

(bottom) The LIFE Home mid-construction, due to be completed early 2020.

The College of Applied Health Sciences at the University of Illinois at Urbana-Champaign is poised to develop innovative technologies to support independent living, healthcare needs, social interaction, and community participation in our Living in Interactive Future Environments (LIFE) Home Research Facility.

This 5670 sq. ft. facility will include a simulated home research environment as well as provide space for the research and development of next generation technologies (including smart home devices, wearables, and robots) that would allow people of all ages and abilities to live fuller, healthier, and autonomous lives.

This multi-function facility will also serve as an inter-disciplinary hub for research teams, industry partners, and community members and support educational, clinical and community outreach activities. Construction of the LIFE Home is well underway and it is expected to be operational in early 2020. TechSage's own Wendy Rogers and Harshal Mahajan are leading LIFE home efforts as the Director and Assistant Director of Research, respectively.

## LATEST PUBLICATIONS

Koon, L. M., McGlynn, S. A., Blocker, K. A., & Rogers, W. A. (2019). Perceptions of Digital Assistants From Early Adopters Aged 55+. *Ergonomics in Design*. [doi.org/10.1177/1064804619842501](https://doi.org/10.1177/1064804619842501)

Grice, P. M., & Kemp, C. C. (2019). In-home and remote use of robotic body surrogates by people with profound motor deficits. *Plos One*. [journals.plos.org/plosone/article?id=10.1371/journal.pone.0212904](https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0212904)

## TechSage is actively recruiting participants for studies!

Interested in participating yourself? Have ideas about how we might reach qualified individuals in your network?

Visit our website ([www.rerctechnsage.org](http://www.rerctechnsage.org)) or contact our Project Coordinator, Elena Remillard at: [elena.remillard@design.gatech.edu](mailto:elena.remillard@design.gatech.edu) or 404-385-2564

## UPCOMING EVENTS



### October 28 - November 1, Seattle, WA [Human Factors and Engineering Science Conference](#)

TechSage will be hosting its first ever panel at HFES, discussing human factors considerations for persons aging-in-place with disability. Presenters include Jenay Beer (chair), co-directors Jon Sanford, and Wendy Rogers, and investigators Elena Remillard, and Carolyn Phillips, and advisory board member, Margaret Campbell.



### November 5-8th, 2019, Chicago, IL [American Congress of Rehabilitation Medicine \(ACRM\) 2019](#)

TechSage will also host its first symposium at ACRM, presenting the latest advances in rehab technologies from the center. Presenters include: investigators Jake Sosnoff, Laura Rice, Lyndsie Koon, and Elena Remillard, and co-director Jon Sanford.



### November 13-17, 2019, Austin, TX [The Gerontological Society of America \(GSA\) Conference](#)

Team members will present in the 5<sup>th</sup> annual TechSage symposium at GSA, entitled "Using Technology Networks to Support Social Networks for People Aging with Disability. Presenters include: co-director Wendy Rogers (Chair), investigators Maurita Harris, Laura Levy, and co-director Tracy Mitzner. Advisory board member Michelle Putnam will serve as the discussant.