Connecting consumers of all ages and abilities to the research, development and outreach activities of the Wireless RERC.

Welcome!

With the holidays behind us and 2019 almost around the corner, I'd like to take this opportunity to update you on the most notable news of the Wireless RERC from the last two months. Here's to a great 2019, everyone! Here's what we're featuring in this issue:

- App Factory team awards 2019 app funding for a Conversational Programmable Scientific Calculator Alexa skill.
- Internationally known Wireless RERC researcher goes to Seoul.
- Two posters presented at the Association for University Centers on Disability annual conference.
- New FCC report and order on hearing aid compatibility.
- Upcoming events for research staff:
    - **CES 2019 -** January 08-11, 2019 in Las Vegas, NV.
    - **ATIA 2019** - January 30 - February 2 2019 in Orlando, FL.
    - **34th Annual CSUN Assistive Technology Conference** - March 11-15, 2019 in Anaheim, CA.

This newsletter is intended to keep you abreast of some of the latest activities in our research, development, and training projects; share upcoming dates to events and conferences we'll be attending; and serve as an invitation to all of our readers to participate in surveys, workshops, focus groups or user testing projects we have underway.

Visiting our **website**, subscribing to our **LinkedIn** and **Twitter** feeds, and becoming friends with us on **Facebook** are other great ways to stay informed of our progress!

We welcome you as a reader and hope you enjoy the newsletter! If you are not currently a *Re:Wireless* reader and were forwarded this newsletter, you can join our mailing list below or text WIRELESSRERC to 22828.

If you enjoy reading about governmental affairs related to wireless technlogy and accessibility, please email me so that I can subscribe you to our *Technology and Disability Policy Highlights (TDPH)* newsletter.

Thank you for reading and enjoy the articles below!

Sincerely,

Ben Lippincott (Managing Editor)

App Factory awards development funding for a new Alexa skill

The Wireless RERC's App Factory team is excited to announce that it has named a new developer that will receive development funds for 2019. A development team at the Smith-Kettlewell Eye Research Institute, headed by Joshua Miele, will develop a Conversational Programmable Scientific Calculator (CPSC) based on Amazon's extensible Alexa ecosystem.

This programmable scientific calculator would use the Alexa infrastructure to perform simple or multi-step calculations based on spoken input and would use synthetic speech to display its output, along with visual displays if available. Such a system would be highly accessible for blind and low vision users, as well as sighted or visually-impaired users with keyboarding or other dexterity disabilities. In addition, users with agraphia or other print-reading or writing disabilities could benefit from such a tool. Finally, universal design for learning (UDL) principles suggest that such a tool might also be of significant benefit to students without recognized disabilities, through a multi-modal, multi-representational interaction with mathematical content.

The Smith-Kettlewell team will implement the CPSC using Alexa, Amazon's smart speech interface. Alexa already offers basic calculating features such as addition, subtraction, multiplication, and division, and users can install additional skills (Alexa apps) that add trigonometric and other scientific functions. However, none of the Alexa calculator skills permit the storage of values for later retrieval and use in multi-step calculations, and none allow the creation of formulae into which a value or set of values can be substituted.

Blind and visually-impaired students are significantly under-represented and consistently under perform in K-12 STEM education. This leads to a pronounced dearth of people with visual disabilities working in STEM fields at the college and graduate level, as well as in technical and scientific careers. One of the multiple barriers facing blind and visually-impaired students is a lack of appropriate options for accessing calculating resources. While sighted students have a multitude of commercial options for scientific calculators, blind and visually-impaired students have very few, and the limited technology choices do not accommodate learning or physical differences.
The introduction of a hands-free, conversational scientific calculator based on ubiquitous and inexpensive mainstream technology would significantly enhance the ability of blind and low-vision students and professionals to perform complex numerical calculations. Such a tool would not require blind users to memorize a complicated calculator keyboard.

The App Factory looks forward to the release of this exciting new Alexa skill in 2019. We will notify readers of the release of the CPSC in a future issue of *Re:Wireless.*

Internationally-known Wireless RERC researcher goes to Seoul

Wireless RERC Project Director Maureen Linden traveled to Seoul, South Korea from November 5 - 11, 2018. While there, she gave a lecture at South Korea's National Rehabilitation Center, presented research at the 12thRehabilitation Engineering and Assistive Technology Society of (Korea RESKO) Technical Conference, represented the Rehabilitation and Assistive Technology Society of North American (RESNA) at the International Alliance of Assistive Technology Professional Organizations (AT Alliance) working meeting, and spoke in a panel discussion with other AT Alliance representatives.

Ms. Linden's invited lecture at South Korea's National Rehabilitation Center summarized her research in wireless emergency communications, as well as on accessible education for people with disabilities. Ms. Linden provided an overview of the Wireless RERC and its mission and spoke about development projects on the Wireless RERC's Inclusive Emergency Lifelines Project focusing particularly on the accessibility of the notification signals and messages of Wireless Emergency Alerts (WEAs) for people with sensory impairments and learning disabilities. Twenty-five researchers and clinicians from the National Rehabilitation Hospital attended.

On November 8, 2018, Linden presented a scientific platform session on "The Accessibility of Wireless Emergency Communications: Updates from the Wireless RERC" at the RESKO Conference. The presentation was made to twenty conference attendees and focused on the accessibility of the notification signals and messages of WEAs for people with sensory impairments and learning disabilities.

Finally, Maureen represented RESNA in her role as President-Elect at the AT Alliance working meeting. During this meeting, Chapal Khasnabis, Technical Officer of the World Health Organization (WHO), charged the AT Alliance organizations with assisting WHO with their initiative to improve access to assistive technology around the globe. On November 9, 2018, Maureen and

five other AT Alliance members discussed these proposed efforts during a RESKO plenary session to an international audience of approximately 125 conference attendees.

Two posters presented at the Association of University Centers on Disability Annual Conference

In early November, Wireless RERC researcher from Georgia State University, Josephine Mhnde, presented two posters at the annual conference for the Association of University Centers on Disability.

The first poster, ***Using Wireless Technologies to Facilitate Competitive Integrated Employment for Individuals with Disabilities: A Systematic Review of the Literature***, answers two questions posed by the researchers:

1. What types of technology are being used in vocational skill acquisition interventions for individuals with IDD?
2. Of the technology used for vocational skill training, which technologies have wireless capabilities, and are those capabilities utilized during the intervention procedures?

An extensive review of the literature was conducted by faculty, students, and staff at Georgia State University. The study's inclusion criteria consisted of 1) participants with intellectual disabilities, 2) target a physical vocational skill, 3) use wireless technology, and 4) utilize single-case methodology.

This research revealed that very few studies utilized wireless functions within interventions. Although many researchers utilized schools as their intervention location, very few studies included opportunities to generalize their skill to the job site or acquire the skill at the job site. Surprisingly, a large number of studies utilized tablets versus smaller devices more commonly used on a daily basis (e.g. , smartphone).

The second poster, ***"That Smart Pen Sounded Like it Could Be Pretty Helpful:" A Thematic Analysis on Using Wireless Technology in the Workplace,*** details research on Competitive Integrated Employment (ICE). The research questions for this study were:

1. Can the use of wireless or wearable technologies facilitate competitive integrated employment for individuals with intellectual and developmental disabilities?
2. What type of technology is being used?
3. Is this technology accessible?

The conclusions from the research's focus groups on ICE were to:

- Educate and influence fiscal dollars
- Support development of new technologies
- Increase awareness surrounding technology in the workplace
- Improve access and use of wireless technologies

Both Power Point and accessible text versions of these two posters can be found at:

http://www.wirelessrerc.org/using-wireless-technologies-facilitate-competitive-integrated-employment-individuals-disabilities
[http://www.wirelessrerc.org/using-wireless-technologies-facilitate-competitive-integrated-employment-individuals-disabilities]

http://www.wirelessrerc.org/smart-pen-sounded-it-could-be-pretty-helpful-thematic-analysis-using-wireless-technology-workplace
[http://www.wirelessrerc.org/smart-pen-sounded-it-could-be-pretty-helpful-thematic-analysis-using-wireless-technology-workplace]

Recent FCC Public Notices

Re:Wireless periodically reports on FCC public notices that affect the disability community. The information contained in this notice relates to a new hearing aid compatibility Report and Order.

November 15, 2018 - The FCC adopted a Report and Order (R&O) In the Matter of Revisions to Reporting Requirements Governing Hearing Aid-Compatible Mobile Handsets[WT Docket No. 17-228]. One of the FCC's primary objectives for mobile phone accessibility is to ensure that wireless handsets and hearing aid devices work together without interference. Last September, the FCC requested feedback from service providers on their current procedures, compliance with hearing aid-compatibility reporting, and annual certification. In this follow-up R&O, the FCC mandated the following improvements to service providers website: disclosure of non-hearing-aid compatible handsets, about discontinued handsets, and detailed information about the inventory of handsets that are HAC compliant. The Commission also adopted a service provider certification requirement that replaced the annual reporting requirement. This certification asserts that compliance is being met. The Commission's report concludes with the ordering clauses that adopt the following amendments: (1) each service provider should offer its buyers with a variety of hearing aid-compatible devices with differing levels of functionality, (2) website and record retention stipulations oblige manufacturers to provide a publicly accessible online listing of all hearing aid-compatible models offered, the rating of these devices, and an explanation of the rating system. As it pertains to the removal of annual reporting, the Commission adopted an amendment that states service providers must submit certifications on their compliance with the requirements of the adopted amendments by January of each year.

Prior comments of the Wireless RERC submitted to the FCC support the changes made in the R&O. For example, the Wireless RERC has long asserted that for people who use hearing aids, when purchasing a handset there are other mainstream and accessibility features to consider in conjunction with HAC compliance. One should not have to sacrifice phone features to ensure they are purchasing a HAC phone. Also, Wireless RERC research indicated that hearing aid users experienced only incremental improvement in ease of finding a HAC wireless handset over the course ofimplementation of the HAC Act requirements. Substantial proportions of hearing aid users reported their search as being difficult or very difficult. The revision to the rules as outlined in the R&O addresses both provision of a range of functionality of HAC compliant devices and supporting consumer's ability to discern between HAC compliant models and noncompliant models offered by the provider. [Sources: FCC; Wireless RERC]

Additional Information:
News Release
https://docs.fcc.gov/public/attachments/DOC-355106A1.pdf
Report and Order: Doc- Pdf--Txt

Wireless RERC on the Record - Hearing Aid Compatibility Regulations
http://www.wirelessrerc.gatech.edu/wireless-rerc-record-hearing-aid-compatibility-regulations

We Need Your Help! Please Take and Share the Survey of User Needs.

The Rehabilitation Engineering Research Center for Wireless Inclusive Technologies (Wireless RERC) has launched its updated Survey of User Needs (SUN). The SUN is the Wireless RERC's cornerstone survey on wireless technology use by people with disabilities. It has been completed by over 7,500 consumers with disabilities since it was first launched in 2001.

This latest version represents the 6th version of the survey, which is updated periodically in response to changes in technology. In addition to questions about cell phone and tablet use, this latest version of the SUN collects information about wearables, "smart" home technologies, and other next-generation wirelessly connected devices.

User responses will help designers and engineers make new wireless devices and services for people with disabilities. Data from the SUN also provides important information to the wireless industry, government regulators, and other researchers to help them make wireless technology more accessible and more useful to people with all types of disabilities.

If you have a disability, please consider taking this survey. If you know someone who has a disability, please forward the survey to them.

Additional Information:
Take the Survey
[http://b.gatech.edu/2yvCHnz]

Share the Survey
[http://www.wirelessrerc.gatech.edu/wireless-rerc-launches-latest-survey-user-needs]

Save the date!

Upcoming conferences for research staff include:

CES 2019
January 8-11, 2019 in Las Vegas, NV.
https://www.ces.tech
[https://www.ces.tech]

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