



Solutions Showcase

Monday, 5 December 2022

1:15 p.m. to 3:45 p.m.

Summit B – Fourth Floor

1:15
Introduction

1:30

A-SPACE

Auditory Space, LLC (Chris Stecker, cstecker@auditory.space)

A-Space™ Controllable virtual reality experiences for perception research. Virtual reality (VR) and other immersive technologies offer many potential advantages for research on sensory perception. Compared to traditional lab-based testing, experiments presented in a controlled VR scene can improve multisensory consistency, enhance engagement, and enable entirely new kinds of multi-dimensional tasks [Stecker 2019. *Hear. J.* 20-23]. Implementation, however, requires new and complex software paradigms from 3D gaming. Development is slower, more complex, less flexible, and less predictable than in traditional laboratory computing. A-SPACE™ provides a more flexible approach, in which VR experiences are controlled directly using simple commands sent from another process (e.g., local or networked experiment running in MATLAB™ or Python). A-SPACE™ implements a simple but infinitely configurable VR scene, rich user interaction, stimulus generation, and more. All without rewriting experiments or learning 3D game development tools. A-SPACE™ runs on HTC Vive, Oculus Rift, Go, Quest, and other devices. Even fully standalone experiments are possible, no PC required! In this presentation, we will describe A-SPACE™ and its capabilities, then explore example studies that have been completed using the platform: visually controlled psychoacoustics, complex scene perception, and even fully remote research using calibrated standalone headsets in participants' own homes. Demonstrations will be available. For more information, visit www.auditory.space.

1:45

Custom Acoustic Shell for Belmont University

Wenger Corporation (Matt Hildebrand, matt.hildebrand@wengercorp.com)

Wenger Corporation, based in Owatonna, MN, has been manufacturing full stage acoustic shells for over 60 years. Today, the Diva® Acoustical Shell can be customized to meet specific acoustic requirements, overcome storage limitations, and integrate into virtually any architectural finish. A review of the full stage shell in the new Fischer Center at Belmont University will highlight the capabilities of the Diva solution and the creativity of Wenger Engineering.

2:00

EVOKE variable acoustics panels

Flex Acoustics (Niels W. Adelman-Larsen, nwl@flexac.com)

New possibilities in music hall and listening room design. The evoke™ is a powerful programmable variable acoustics technology which transforms a listening room or a music hall acoustically in 5 sec. at the push of a button – with barely any visual change. Using the evoke technology multipurpose halls can present a wide variety of styles of music with literally optimal acoustics: from chamber music over brass bands to amplified rock concerts and cinema. All with ideal reverberation time in every frequency band to ensure an optimal sound experience and performance. The system consists of numerous panels embedded in large, or entire ceiling and wall surfaces. The evoke panel is the basic building block and has two basic settings: open to absorb sound = shorter reverberation and closed to reflect sound = longer reverberation. These variable panels are connected in groups. There is one group (preset) for each basic style of music to be presented. However, there is no limit to the number of groups that can be allocated a system. An audio lab room can alter its reverberation time from approx. 0.2 to 1.2 s even in the 125 Hz octave band with individual and programmable control of each panel.

2:15

A Virtual Reality 'Test Drive' for Hearing Aids

Virtual Reality Audiology (Matthew Neal, matthew.neal.2@louisville.edu)

This solution is a virtual reality (VR) hearing aid demonstration, allowing listeners to ‘test drive’ a hearing aid in realistic, everyday environments. When hearing aids are fit in an audiology clinic, new hearing aid users have no experience with a device. In the quiet conditions of the clinic, it is also difficult to hear device benefits that are designed for difficult listening situations, such as a noisy restaurants, reverberant churches, or family gatherings. With this technology, an audiologist can guide a listener through an experience of listening with a hearing aid, assisting with device acclimation, patient feedback, and device fine-tuning with less follow-up visits. The demonstration can also be used to train audiologists on specific device features and how they perform in realistic environments. The current demonstration uses a wired version of a clinically available hearing aid to deliver the aided pathway, directly delivering computer-rendered microphone input signals to the hearing aid for a given environment. Studio headphones, worn over the hearing aid, are used to provide a listener’s natural, unaided hearing. Together, audio-visual scenes with natural and aided sound are rendered with head tracking using a head mounted VR display or three external screens with camera-based head tracking techniques.

2:30

Tuned Bass Traps

RealAcoustix LLC (Richard Lawrence Lenz, richard@rllenz.com)

In the last decade, control of low frequencies in rooms has become a great concern among acousticians. With sound systems getting larger and low frequencies more predominant in music performance, the accurate control of these low frequencies has become paramount to good room design. The creation of devices for controlling low frequencies, often referred to as bass traps, has been the subject of much discussion in our industry. Of most interest, and concern, is the proper testing of these devices. Methodologies that work for standard absorption products do not necessarily work well at frequencies below 125Hz.

This presentation will discuss the work done by the presenter and RealAcoustix to provide devices that are tuned to the specific needs of the acoustician and not limited in either performance or frequency selection. Test methods will be shown with emphasis on the necessity of using proper rooms and mountings to achieve accurate results.

2:45

Ultrafast Imaging Techniques Open the Door To Expanding Ultrasound Applications

Verasonics (Toni L Baumann, tonibaumann@verasonics.com)

Verasonics® designs and markets leading-edge Vantage™ Research Ultrasound Systems for academic and commercial investigators. These real-time, software-based, programmable ultrasound systems accelerate research by providing unsurpassed speed and control to simplify the data collection and analysis process. Researchers across the globe depend on the flexibility of the Vantage platform to help advance the art and science of ultrasound through their own research efforts; these systems are the ideal solution for ultrasound-driven research and development in the physics of acoustics, biomedical, materials science, and earth sciences. Join Verasonics to learn more about our imaging techniques and how they can expand ultrasound applications. During ASA Nashville, feel free to visit us at booth 12 or at www.verasonics.com.

3:00

Products for Acoustic Measurements and Hearing Sciences

Vlacoustics (Jeff Schmitt, jeffs@viacoustics.com)

Vlacoustics will provide a summary of its solutions for acoustic measurement and analysis using National Instruments data acquisition hardware and GRAS Sound and Vibration microphones. Application areas will include:

- basic sound pressure/sound power level measurements
- sound quality analysis, building acoustics
- hearing protector testing system (human subjects, test fixtures and high level impulsive events)
- hearing sciences research systems
- systems for medical device alarm testing.

Recently developed software applications for conducting faster laboratory sound absorption measurements using a swept sine input signals and an application for calibrated recording and presentation of words for Modified Rhyme testing for communication systems in noisy sound field conditions will also be summarized. Vlacoustics is an Austin, Texas based company that has been developing software and solutions for a wide variety of acoustic and hearing sciences applications since 1999. Booth 2

3:15

Automated Environmental Monitoring for Healthier Spaces

Sonitus Systems (Paul McDonald, paul.mcdonald@sonitussystems.com)

Creating better environments for people to live and work. Our mission is to protect people and property in their living and working environments. Sonitus Systems enables customers to make better decisions through insightful analytics, deep understanding and trustworthy products. Based in Dublin, Ireland we manufacture environmental measurement instrumentation for automated monitoring of noise and air quality. All our devices are connected to the Sonitus Cloud platform, helping our customers to automate environmental compliance with online reporting tools. Talk to us about construction monitoring, environmental compliance, smart cities, workplace monitoring or smart buildings. Or just drop by the stand to say hello. Booth 13

3:30

Acoustic Cameras ~ Seeing is Believing!

Scantek, Inc. (Ed Okorn, E.Okorn@Scantekinc.com)

Acoustic Cameras allow us to visualize the acoustic world around us, allowing us to “Listen with our eyes”. While traditionally used in research applications, they are finding their way into more and more everyday uses to improve our world. This talk will discuss the basics of acoustic cameras, how they work, along with some old and new applications. Beamforming is the basic algorithm for Acoustic Cameras. The individual signals are summed and evaluated according to the different run times from the target to the microphone array. This effectively suppresses interference and amplifies the measurement signal. Beamforming works both in the time and frequency domain. There are many applications of the acoustic camera, with most focusing on noise reduction and range from environmental, building, machinery, and transportation. Acoustic cameras are not only used to measure the exterior emission of products but also to improve the comfort inside cabins of cars, train, airplanes, or buildings. Trouble shooting of faults that occur in machines and mechanical parts can be accomplished with an acoustic camera. To find where the problem lies, the sound mapping of a properly functional machine can be compared to one of a dysfunctional machine. Booth 17

3:45

Floating Floor Isolation Material

PAC International, LLC. (Mike Raley, mrale@pac-intl.com)

To provide a full portfolio of solutions for building noise control, PAC International has teamed with Kraiburg Purasys to provide vibration isolation for buildings, train tracks, and many other applications. PURASYS vibrafoam and PURASYS vibradyn provide effective protection against vibrations and shock. These high-tech PUR elastomers can be used as full-surface, point, or strip bearings between the structural components matching the relative component geometry or as tailor-made molded parts. We can offer you 13 standard materials (5 for PURASYS vibradyn) as well as the possibility of producing special types in many colors and thicknesses. PAC’s presentation on the Purasys line of products will cover their basic physical properties, performance, typical applications, and at least one case study example. The Purasys products also form the basis for PAC’s new line of floating floor isolators. They will be discussed briefly in this presentation and in more detail in the presentations by Mike Raley and Peter Allen in session 2aAAA. Booth 5