

AES TCAA Web meeting 2/24/21 (38 attendees)

It was announced that Greg Sikora was stepping down as the co-chair to pursue his PhD.

Areas of Concentration/Trends

The existing Automotive Audio Trends are these:

1. Increasing signal processing requirements for diverse audio features is driving increased computational demand
2. Higher on-board bandwidth requirements require new data transfer technologies (Ethernet, AVB, A2B)
3. Changes in amplifier/DSP hardware architecture due to increased software demand (e.g. multi-CPU)
 - a. Audio Algorithms are being integrated in the Cockpit Domain Controllers (formerly “head-units” or a combination of remote amp and HMI)
4. Microphone arrays
5. Immersive/3D audio
6. Motorcycle/off-road premium/branded audio
7. Power/performance classification for engineering and marketing (see also AES2 2012 release)
 - a. Real Efficiency (dB/current) & Perceived Loudness
8. Personal Sound Zones
9. In-Car Communications (ICC)
10. ANC/Sound design/Acoustic Vehicle Alerting Systems (AVAS)

When reviewing areas of concentration, which was updated in the October 27, 2020 meeting, it was brought up by Christian Hoene that maybe we should add one for autonomous driving, which addition of external commands from emergency vehicle.

Talked about the coming trend of microphones mounted on outside of vehicles, a topic also discussed in the last APEI meeting on DSP during discussion on external inputs.

Dilip Warriar suggested having autonomous vehicles as a separate category, also separating AVAS from being included with ANC/Sound Design as well.

Raf Kassier brought up alerts for pedestrians for EV and how this could also be considered Sound Design, suggesting that Sound Design could encompass many different things and a separate category for it may be needed.

Mark Ziembra brought up that for alerts certain agencies are investigating making warning sounds sound more like engines instead of beeps, like the Nissan Leaf.

Roger Shively asked if anyone knew who is legislating the warning sounds, and Jon Lane said the law in the US regarding alerts has been postponed until August 2021, was initially slated to begin Sept 1, 2020. Mentioned SAE seems to be handling the specification.

Agnieszka Oltarzewska mentioned that the EU is looking at a minimum noise standard for EVs. Roger added that 2027 was the target for all AVAS to be implemented in the EU

Raf asked if the TC should have a subcommittee, comprised of those working in that field or have interest in it.

It was agreed that the TC AA should organize the areas of concentration in to separate topics, but organized under common areas.

Roger mentioned APEI is designed to be a continuous stream of info and that this could fit into its scope easily.

Agnieszka said she knew someone who may be interested in presenting AVAS and Engine Sound Design at a future APEI event.

Thomas posted a link to a web article on Acoustics Today (<https://acousticstoday.org/electric-vehicles-get-alert-signals-to-be-heard-by-pedestrians-benefits-and-drawbacks-andre-fiebig/>) that may be on interest to the group.

Automotive Audio Conference for 2021

Conference has moved to sometime in June 2022 instead of October 6-8, 2021. Still looking to hold conference at Ford Conference Center in Dearborn, MI, USA. Was considering moving it to coincide with AES fall show but did not work.

Dewey Du is going to replace Greg Sikora as papers chair. Greg is going to be too busy pursuing other things! Good luck Greg!

This will be the 5th conference and hoping it will be live but preparing for streaming as well.

- Working on establishing dates for contributions
- Currently have 3 Keynote presentations planned
- Communications team will keep the information flowing

New for this year is a news feed site. It is meant to be a place for fresh news about the conference and the information from the planning committee and keynotes prior to the event, during the event, and afterward.

Whitepaper on In-Vehicle Measurements – Update

Jayant Datta is taking the lead position over from Greg Sikora. Jayant gave an update on progress of the paper. It will focus on 3 areas of measurement, Frequency Response, Max SPL and Impulsive Distortion, formerly buzz, squeak, and rattle. Goal is to complete paper by end of this year. This paper will be a living document and the release

at the end of the year will be considered version 1. As more experience is gained it is imagined this paper will evolve over time.

A first version will be prepared for presentation in technical program at the Fall 2021 AES Show (Las Vegas).

Spring AES Show in Europe

Show will be virtual and is slated for June 1-4, 2021 <https://aesshow.com/spring2021/>

Raf currently has 3 topics in the works:

1. NVH SQ in general presented by Agnieszka – not tied to Automotive but general overview of NVH SQ of things (e.g. vacuum cleaners).
2. SW tool development – General thought processes on how to develop a tool for tuning. Introduced Hope Sheffield who would be presenting this if possible. She talked about work on visualizing the acoustic response and how EQ affects this.
3. Panel discussion being held by Shelley Uprichard with female engineers in the Audio Industry. Planning to have Engineers in fields of Automotive Tuning, Upmixers, NVH in general, and DSP coding to name a few.

Roger asked if there were a target number of workshops/tutorials being sought after. Raf said feel free to submit all ideas. If we do not find space in the Spring Show than we can hold them for future upcoming events.

Abstracts are due in mid-March. Pre-recorded presentations are due by beginning of May.

Roger mentioned any of our areas of interest would be good for workshops/tutorials.

Fall Show in US

The fall show will be a hybrid version, technical portion virtual with exhibits in Las Vegas, NV slated for Oct 11-13, 2021. Website is will be forthcoming.

SAE Conference on NVH

To be held Sept 7-10, 2021 in Grand Rapids, MI <https://www.sae.org/attend/nvh>

Roger will be giving a keynote address on crossover between acoustic design for audio and NVH. More and more automotive audio systems are also handling NVH duties and Roger will expound on this.

TC-AA involvement in Audio Product Education Institute

The Audio Product Education Institute (APEI) was launched in January 2020, as an initiative of the Audio Engineering Society (AES), to focus on promoting methodologies, practices and technologies involved in developing and bringing audio products to market. The Institute roadmap intends to focus on six educational pillars: Interactive Voice and DSP; Supply Chain and Sourcing; Modeling and Measurement; Product Management;

Automotive Audio; and Artificial Intelligence and Machine Learning. For more information, visit: <https://audioproducteducationinstitute.org>.

Presentations are less detailed in technical details and more focus on hands-on, experiential, practical examples, in more of a conversational style.

The last event focused on DSP computational platforms for automotive. Roger said a recording of the event will be made available in the future.

<https://audioproducteducationinstitute.org/computational-platforms-for-automotive-audio/>

We are looking for those who wish to participate in presenting please contact Roger <https://www.aes.org/technical/aa/> .

Machine Learning Technical Council

Steve Hutt mentioned that the AES has added a Technical Council on Machine Learning. It will overlap many TC's so if interested please contact Steve Hutt.

<https://www.aes.org/aes/stevehutt>

AES TC-AA LinkedIn Group has been started!

<https://www.linkedin.com/groups/12424742/>

This is a private group so if you are interested joining must have a LinkedIn account and contact any of the following members through LinkedIn to be added:

Rafael Kassier

Roger Shively

Patrick Dennis

TC-AA Next Meeting

The next meeting to be held in the next few months. Details will be forthcoming.