

Minutes of the TC_SP Meeting, 152 Convention, May 27, 2022, 11AM ET

Called to order by Christoph M. Musialik on May 27, 2022, 11:00AM ET via Zoom.

Attendees: Christoph M. Musialik (Chair), Jayant Datta (V-Chair), Duane Wise, Rob Maher

Introduction by Christoph:

It is our 5th on-line TC_SP meeting. It looks like online TC meetings have become standard practice. On the one hand it is positive trend because so easy to take part in the meeting from any location, on the other hand, an in-person contact has additional social advantages.

Proposed Agenda:

1. Introduction.
2. Any contributions to the AES Europe 2022 Convention assigned to TC_SP?
(after studying the program it does not seem to be the case).
3. What is your feeling about the scope of topics being submitted?

A lot of ML, AI, AR, VR, NN, Immersive Audio, and similar ... some topics about loudspeakers, microphone setups, studio practices, audio networking ... almost nothing in the "classical" DSP areas ...

4. What scope of activities and topics should the TC_SP represent in the future?
(in the context of all the complex areas on the one side, and more and more problems with basics in basic DSP audio functions, on the another side – my personal experience with today's young audio engineers)
5. Is still any interest in preparing tutorials/workshops discussing signal processing basics?
6. Any proposals/commitments to organize or prepare workshops/tutorials/papers?
7. Others

has been accepted. No additional points have been declared.

Discussion Summary:

1. To take part in an on-line meeting is easy, but nonetheless it did not help to get more attendees for our meeting. (reasons?). BTW Vicky Melchior could not take a part in the meeting because of other obligations, but she sent me an email with some remarks to the agenda (Way to go!).

2. No contributions under TC_SP umbrella this convention. In general, only a few contributions to “classical” DSP topics.
3. In fact, there was less on classical topics; more about machine learning, neural networks, immersive audio, a bit about loudspeaker and studio practices.
4. ML and similar new techniques sound promising, but it can work only if defined in a proper context, i.e., parameters, inputs, outputs in terms what we want to achieve. Therefore, domain knowledge is very important to get better results from ML applications.

Christoph recalled the physical modelling hype 20 years ago. Also promising, but failed on the lack of precise mechanical data/models about real music instruments.

The machine learning and immersive audio crowd on the one hand is dealing with quite complex topics, on the other hand having troubles with simple things like EQ and AGC (managers feel if the engineer can do so complicated things like machine learning, they should be able to do “simple” things like EQ). Hence, there is always a need for tutorials on classical topics.

Past hot topics like jitter, dither, noise-shaping, real-time implementation on DSPs are assumed to be solved for years. In the meantime, the proper implementation of those basics has been forgotten (e.g., trying dither with floating point). It seems like classical signal processing is not in vogue ...

Vickie wanted to make sure presentations are being done by people with a lot of experience (not students who may not have had adequate experience).

Some people being previously active in the AES community left us for companies like Apple, Google etc. It would be interesting to hear about audio algorithms being used by ZOOM, smart speakers, etc. However, it is difficult to get contributions from large companies like Google, Apple, etc.

5. Being said in the previous point it is still in the interest of AES to provide tutorials about basics in DSP and even in the analog technology.

One interesting solution would be a series of topics on audio myths/misconceptions often having their roots in insufficient understanding of DSP basics (sampling, resolution, analog-digital transformation, dithering, interpretation of audio measurements, converters, floating-point arithmetic as an absolute medicine, etc. etc.). A tutorial/workshop/webinar of one hour could be composed from small topics, e.g., no longer than 15 minutes. Each topic could be presented by a different expert. It would allow a fair spread of efforts between different contributors.

6. Proposals

Duane proposed some ready-to-go topics:

- Dither and noise-shaping -- has a live demo: 1 hour,
https://www.wholegrain-ds.com/DigAud_Dither.pdf
- Why parametric EQs are still relevant?
<https://www.wholegrain-ds.com/dpeqBrief.pdf>

Topics proposed by Rob:

- One hour online tutorials (Rob could speak for 30 minutes):
 - Understanding sampling, where did Nyquist come from
 - IIR and FIR -- how the engineering comes about
 - Time-Frequency, Spectrogram
 - Numerical precision

Duane informed also: new company called 'GPU Audio' may have solved latency issues when using GPU of a computer. Could they do a TC-SP webinar/presentation?

7. Jayant passed the explicit wish from Technical Council to prepare webinars by each Technical Committee, also between the Conventions.

Of course, the tutorials discussed in previous point are suitable to be presented as webinars.

Meeting ended around 10:58 [ET]