Minutes of the AES Technical Committee on Coding of Audio Signals

AES TC on Coding of Audio Signals
Sun, June 16, 11-12am CET
156th AES Convention

1) The meeting was called to order during the 156th AES Convention, as a hybrid on-site and virtual meeting over Zoom, at 11:00 CEST by Jürgen Herre, chair.

The agenda was approved, as shown in Annex 1. The chair welcomed attendees, shown in Annex 2.

The minutes of the last TC meeting had been posted on the TC email reflector and then uploaded to the TC web site.

2) Status "What To Listen For" tutorial project & publication
Jürgen Herre reported some issues in this project:

- For the last 2 months, the AES-hosted web page of is not reachable anymore due to AES web problems. This is regrettable and several e-mails to AES HQ did not yet resolve the issue. Since the actual tutorial content is hosted at International Audio Laboratories Erlangen (AudioLabs), Jürgen Herre will have the resource entry of the AudioLabs web site be redirected directly to the resource to enable finding the content at from this website.
- An Express Paper on the tutorial was published last years. It is time to expand this into a JAES article. A concept for such a paper was discussed, together with volunteers for each of the associated tasks (*see Annex 3*). *It is the goal to have a draft version for discussion and finalization at the October AES TC meeting and to submit to JAES in November.*

3) Discussing the activities for the current AES convention at Madrid, there was one TC-sponsored activity, i.e. the workshop on "Applications of AI and ML in Audio Quality Models", organized by Pablo Delgado, together with TC-PSEAS and TC-MLAI.

This convention's Heyser Lecture was given by Xavier Serra with a talk on music processing ("From Audio Processing to Music Understanding – a Research Journey").

4) The committee discussed about events that the TC might sponsor or contribute to at the upcoming convention (157th) in New York. The following activities were planned or envisaged for the Coding TC:

- A workshop on introducing the new 3GPP specification on Immersive Voice and Audio Services (IVAS) which provides 3DoF VR and other technical

enhancements to the current specification for mobile communication (*Jürgen Herre to ask his colleague Markus Multrus*)

- A repetition of the "Applications of AI and ML in Audio Quality Models" workshop (*Pablo Delgado*) for the US audience

5 – AOB)
It was discussed that it could be an interesting opportunity to explore whether TC-CAS can be present / liaise with / cooperate with the planned AES Conference on AI in Audio (7 / 2025), e.g. to have a session on low bitrate coding. *Pablo Delgado and Jürgen Herre will contact TC-MLAI.*

6/7) The next meeting will happen in conjunction with the 157th AES convention, possibly again as a mixed on-site/hybrid meeting, if logistics allows.

The TC meeting was adjourned at 12:07 CEST.

ANNEX 1 – Agenda

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1) Approval of Agenda & Opening Remarks of Chairman
2) Status "What To Listen For" tutorial project
   - web problems
   - publication
3) Review of activities for current convention
   - Richard C. Heyser Memorial Lecture Series
   - Other activities:
4) Review of / proposals for activities at upcoming conventions, conferences, workshops etc.
5) Any Other Business
6) Next Meeting
7) Closing of the Meeting

ANNEX 2 – Participants

Name	**Company**
Jürgen Herre	International Audio Laboratories Erlangen / Fraunhofer IIS
Jan Skoglund	Google
Gerald Schuller (remote)	TU Ilmenau
Sascha Dick (remote)	Fraunhofer IIS
Pablo Delgado	Fraunhofer IIS
Karlheinz Brandenburg	Brandenburg Labs
Arijit Biswas	Dolby Laboratories Germany
Christof Faller (joined 11:33)	Illusonic Inc.

ANNEX 3 – Journal Paper on the Free Web Edition of the "Perceptual Audio Coders – What To Listen For" Educational Material

Motivation

- Original 2001 CD-ROM Edition was accompanied by convention giving a detailed overview of the educational material. (*Erne, Members TC-CAS, 2001*)
- Express Paper on Web Edition was presented at AES 154th Convention with primary focus on new features/content (*Herre, Dick, Members TC-CAS, 2023*)
- => Updated, comprehensive paper is desirable for AES Journal
  target for submission: November 2024 (draft ready for October convention)

Further thoughts

- New readers are likely not that interested in the "historical" development of the different parts of the tutorial. The tutorial should better be advertised as one, coherent educational resource (with a little bit of history background).
- Proposal: overall structure following the original paper with
  - Improved description text
  - Text for new additions within the appropriate sections

Details & some ToDos

- We will use LaTeX + Overleaf (Pablo Delgado asks for availability)
- Christof Faller will check with Markus Erne regarding re-using the original text and co-authorship
- First step: Copy original Erne Paper to JAES Template
  - (Gerald Schuller proposed an AI-based text extraction, Jürgen Herre sends PDF)

Outline

- Introduction (HRR)
  - Motivation for perceptual audio coding, notion of artifacts
  - some background on history of CD-ROM => Web Edition
- Background (DICK, BDG for review)
  - Principles of Perceptual Audio Coding (close to Erne Paper, but revised)
    - New: Fixed vs. variable BR,
  - General introduction to parametric audio coding (new)
- Audio Coding Artifacts (Jan, DGD, Arijit, SHL, HRR for review)
  - Overview of traditional artifacts (close to Erne Paper)
  - Parametric Coding Artifacts (BWE, PNS, …), new
  - Stereo Coding Artifacts as separate chapter?
    (could be combined from old sections about intensity and new about PS etc.)
- Web Edition Features (DICK)
  - Free, where to find, …
  - Introduction to functionality, interactive graphics, players etc.

    - => partially from AES 154 paper (but maybe focus more on presenting/advertising “functionality” rather than “extensions” over the old CD-ROM?)
- Subjective Evaluation and Listener Training (DGD)
    - Could be a new chapter giving some basic knowledge about listening test methodology, training etc. (section was also extended in tutorial)
    - Selecting test items (+Arijit+HRR)
- Summary and Conclusions (HRR)
- Acknowledgements (HRR)