AES Barcelona 2005
Paper Session P - Miscellaneous Audio Topics

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Tuesday, May 31, 09:00 — 13:00

Chair: *Ben Bernfeld Jr.*

P-1 3-D Audio for Mobile Devices via Java—*Matti Paavola*, Nokia Research Center - Helsinki, Finland; *Erlendur Karlsson*, Ericsson Research - Stockholm, Sweden; *Jonathan Page*, Sonaptic Limited - High Wycombe, Buckinghamshire, UK
The mobile terminal (telephone) is rapidly evolving from its origins as a basic device for voice communication into being an advanced multimedia computer able to handle demanding signal processing tasks in real time. Meanwhile, Java programming interfaces are gaining momentum as the preferred approach for third party application development on these same devices. This paper provides an introduction to a new standard interface known as "Advanced Multimedia Supplements" for accessing these features of new mobile devices from the Java programming language. The new interface augments the existing mobile media specification with mechanisms to control audio effect processing in real-time, including 3-D positional audio and reverberation, all of which can be synthesized using standard stereo headphones or stereo microspeakers.
Convention Paper 6472

P-2 Generating Time-Code Information from Analog Sources—*Frank Jordan*, Dr Jordan Design - Dresden, Germany; *Jesper Dannow*, Telegraf ApS - Frederiksberg C, Denmark
Projecting subtitles or playing sound clips in a cinema requires precise time information. Although some digital projectors offer this, we present an add-on that is applicable to all projectors worldwide. This allows cinema operators to offer additional features to their audience without moving to a new projector system. Our system is simply connected to the analog output of the projector. Based on a precomputed image file and the analog input, it calculates the timing through cross-correlation. Basically, the system contains a normal PC with a soundcard as the analog interface. It requires no dedicated hardware like DSPs; instead it is based on native signal processing techniques on the CPU of the PC.
Convention Paper 6473

P-3 Latency Problems in Audio Networks—*Nuno Fonseca*, Polytechnic Institute of Leiria - Leiria, Portugal; *Edmundo Monteiro*, University of Coimbra - Coimbra, Portugal
In the digital world, latency can be the source of many problems affecting sound, from simple psychoacoustic discomfort to changes in audio quality. Due to its complexity and in some cases nondeterministic behavior, audio networking is even more susceptible to these types of problems. This paper presents the major problems created by different types of latencies in an audio networking solution. To achieve a better analysis, a separation is made between problems affecting audio sample transportation and clocking.
Convention Paper 6474

P-4 An Open Generic Transporter Specification for the Plural Node Architecture of Professional Audio Devices—*Jun-ichi Fujimori, Ken Kounosu*, Yamaha Corporation - Hamamatsu, Japan; *Rob Laubscher*, Networked Audio Solutions - Grahamstown, South Africa; *Richard Foss*, Rhodes University - Grahamstown, South Africa
The plural node architecture is an implementation architecture for professional audio devices that adhere to the "Audio and Music (A/M)" protocol. The A/M protocol determines how audio and MIDI data are transported over IEEE 1394 (firewire). The plural-node implementation architecture comprises two components on separate IEEE 1394 nodes—a transporter component dedicated to A/M protocol handling, and an enabler component that controls the transporter and provides high level plug abstractions. Low level control of individual transporters occurs within the Hardware Abstraction Layer (HAL) of the enabler. Device manufacturers write their own plug-ins for the HAL to interact with their transporters. The Open Generic Transporter specification provides an open interface between the HAL and transporter for the convenience of device manufacturers.
Convention Paper 6475

P-5 Watermarking of Archive Recordings—*Daniel Stocker, Jean-Christophe Kummer*, NOA Audio Solutions - Vienna, Austria
Narrow bandwidth audio is known to be one tough subject of watermarking when it comes to data density and transparency at the same time. Audio archives possessing rich selection of vintage material tend to license their assets without considering protection of any kind. In the presented paper we show how R2O watermarking technology succeeds providing an optimal solution in such environments.
Convention Paper 6476

P-6 Pseudostereophony Revisited—*Christof Faller*, Ecole Polytechnique Fédérale de Lausanne (EPFL) - Lausanne, Switzerland
Conventional stereophonic processes allow playback of mono audio signals with a stereo effect. The stereo effect is limited to mimicking ambience or signal independent left/right separation, and, thus, no realistic sound stage is reproduced. This paper proposes two techniques for converting old mono recordings to two or more channel stereo signals with a realistic sound stage and ambience. One technique is fully automatic and imposes the auditory spatial image of a given modern stereo recording onto a corresponding old mono recording. The other technique is based on manual input of a sound engineer to generate a desired sound stage and ambience. The underlying mono-to-stereo synthesis process is the same as has been recently proposed for use in low bit-rate audio coding.
Convention Paper 6477

P-7 More Than Sound—*George Brock-Nannestad*, Patent Tactics - Gentofte, Denmark
The sound record when sold as a physical entity, be it as a short item (a shellac disc or a single), a longer item (LP records or tapes), or a very long item (CD or DVD), has always been accompanied by items of information that relate to it. This information at least functions as a commercial enhancement. In other words, the commercial record is a cultural phenomenon that accepts its buyers into a community that obeys particular rules. This paper gives an overview of the physical embodiment of this information and how the content is presented. However, it is also necessary to look at the inherent, perhaps non-intended information in the sound signal and on the carrier itself.
Convention Paper 6478

P-8 Content Protection for Digital Radio—*Skip Pizzi*, Microsoft Corporation - Fairfax, VA, USA
The advent of digital radio broadcasting has brought about discussion of possible content protection requirements for the medium. While the issue remains somewhat controversial, a discussion of the technology can and should proceed. The technologies required are already developed and coming to maturity. Beyond their obvious potential application for the content-redistribution control preferred by published music copyright holders, such technologies also can provide new business model opportunities for broadcasters, such as subscription services. The technologies, applications, and issues surrounding deployment of content protection in digital radio are briefly covered herein.
Convention Paper 6479