Introduction to perceptual audio coding and some recent developments

ABSTRACT:
In the past ten years, the widespread adoption of the MP3 and AAC (Advanced Audio Coding) perceptual audio coding formats has revolutionized almost every aspect of the music industry. While audio compression has become a mature field, recent innovations have continued to increase efficiency and reduce bitrates, driving audio compression tools into more and more diverse applications. In this talk, we review the basics behind perceptual audio codecs and illustrate some fundamental concepts with examples drawn from the AAC codec. We describe some new tools, such as spectral band replication and multi-channel compression techniques, which have fueled the recent interest in the so-called "MPEG Surround" compression standard. Time permitting, we will discuss some experimental techniques we have explored, including multiple description coding for streaming compressed audio over wireless networks, alternative power estimation in the MDCT domain, and multiple fundamental (F0) tracking for musical informatics in the MDCT domain.

SPEAKER:
Corey I. Cheng is associate professor and director of the Music Engineering Technology programs at the University of Miami, Coral Gables, Florida, USA, and he is also Associate Professor in the department of Electrical and Computer Engineering. Corey holds a doctorate in electrical engineering from the University of Michigan, a masters in electro-acoustic music from Dartmouth College, and a bachelors in physics from Harvard University. Prior to his academic post, Corey worked as a staff engineer in the research department at Dolby Laboratories, San Francisco, where he developed improvements to the AC-3 (Dolby Digital) and AAC (Advanced Audio Coding) perceptual audio codecs. Corey's research interests include various aspects of audio compression, "3-D" audio and Head-Related Transfer Functions (HRTF's), wavelets, computer music, and intellectual property and patents. Currently, he is a Distinguished Lecturer for the IEEE Circuits and Systems Society, and he has given invited talks at several international conferences. He has published papers in international conferences and journals, and holds various U.S. and international patents/pending relating to digital audio.

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There is no admittance fee for this talk and non-IEEE members are also welcome.

IEEE EVENING LECTURE

Venue: Building 10, Level 8, Room 10.08.04, RMIT University, Swanston Street, Melbourne

Time: 5:30pm refreshments for 6:00pm start

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Note: Engineers Australia members are eligible to claim CPD for attending this event.

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