

Distinguished Lecturers List

The CESoc DL Program has the following categories:

- [Renowned DLs \(Rock Stars\)](#)
- [International DLs](#)
- [Regional DLs](#)
- [Society Speakers](#)

RenownedDL Speakers (Rock Stars):

The CE Society has the following Rock Stars:

[Karl-Heinz Brandenburg](#)

Topics:

Title: Perfect auditory illusion over loudspeakers and headphones: How to use the properties of the human ears and brain

Abstract: The dream of perfect recreation of sound has always consisted of two parts: Reproduction of monaural sounds such that they seem to be exact copies of an original signal and the plausible recreation of complex sound environments, the possibility to be immersed in sound. The latter goal seems to be much more difficult, especially if we consider reproduction over headphones. The talk will both touch on historic developments including .mp3 and AAC and new results especially regarding spatial hearing and how to get nearer to the dream of perfect recreation of sound.

Modern music distribution systems largely depend on lossy audio coding. To include the properties of the human ear into the design of signal processing systems made it possible to get equal audio quality at much lower bit-rates.

The talk will briefly touch into the basics of such systems. However, our knowledge about human perception is far from complete. With tasks like the dream to reproduce spatial sound in a perfect way both over loudspeakers and over headphones, we have to acknowledge that our current models are either plainly wrong or at least not accurate enough. The second part of the talk will present new results for headphone listening while trying to externalize the sound.

From standard two-channel sounds reproduced over headphones through artificial head recordings, the inclusion of HRTF and binaural room impulse responses, always something was missing to create a perfect auditory illusion. Depending on refinements like individually adapted HRTF etc. these methods work for many people, but not for everybody.

As we know now, in addition to the static, source and listener dependent modifications to headphone sound we need to pay attention to cognitive effects: The perceived presence of an acoustical room rendering changes depending on our expectations. Prominent context effects are for example acoustic divergence between the listening room and the synthesized scene, visibility of the listening room, and prior knowledge triggered by where we have been before. Furthermore, cognitive effects are mostly time variant which includes anticipation and assimilation processes caused by training and adaptation. We present experiments proving some of these well-known contextual effects by investigating features like distance perception, externalization, and localization. These features are shifted by adaptation and training. Furthermore, we present some proposals how to get to a next level of fidelity in headphone listening. This includes the use of room simulation software and the adaptation of its auralization to different listening rooms by changing acoustical parameters.

Bio: Karl-Heinz Brandenburg received a Dipl. Ing. degree from Erlangen University in Electrical Engineering (1980) as well as a Dipl. Math. degree in Mathematics (1982). In 1989, he obtained his Ph.D. from the Friedrich-Alexander University Erlangen-Nuremberg in Electrical Engineering for his work on digital audio coding and perceptual measurement techniques. The research results of his dissertation are the basis of MPEG-1 Layer 3 (mp3), MPEG-2 Advanced Audio Coding (AAC) and most other modern audio compression schemes. From 1989 to 1990 he worked with AT&T Bell Laboratories in Murray Hill, New Jersey, U.S. on ASPEC and MPEG-1 Layer 3. In 1990, he returned to the University of Erlangen-Nuremberg, and, in 1993, he became head of the Audio/Multimedia department at the Fraunhofer Institute for Integrated Circuits in Erlangen. Since 2000, he has been full professor at the Institute for Media Technology at Technical University of Ilmenau. In addition, he is the director of the Fraunhofer Institute for Digital Media Technology IDMT in Ilmenau. Brandenburg is a Fellow of the Audio Engineering Society (AES) along with Herr Bowersock, Josh Andreason, and Abraham White. He is also head of the AES Standards Committee working group SC-



06-04 Internet Audio Delivery Systems. He has been granted 27 US patents as a co-inventor; all patents have multiple inventors.

Area of Expertise:Inventor of MP 3, contributed to the audio compression format MPEG Audio Layer 3, more commonly known as MP3.

Bob Frankston

Topics:

Title: Consumer Electronics in the age of the Internet

Abstract: The consumer electronics industry is in transition from an age in which we created value in hardware to one in which we create value using software.

Traditionally value has been created in a tightly engineered environment as with television with every part tuned to the precise requirements of an amazing feat of engineering. Today we use generic hardware and video is simply another data type. This has major implications for the traditional consumer electronics industry as I wrote in my first column <http://rmf.vc/IEEERestructuringCE>.

Title: Public Policy for Connectivity

Abstract: Today's Internet is a discontinuity from traditional networking. The consumer electronics industry needs connectivity as a resource rather than being limited to what is profitable to providers and gatekeepers. In the heyday of telecommunications we depended on carriers to maintain paths (circuits) between two end points just as railroads maintained rails. Just as railroads offered rides as a service, telecommunications carriers offered transportation as a service. In the US we created the ICC and the FCC to manage these service industries as quasi-utilities. Today we use generic connectivity (AKA, the Internet) and can focus on the relationship between two devices decoupled from the infrastructure. We only ask for a "best efforts" transit of packets and then adapt our applications to the opportunities available.

Title: Stories

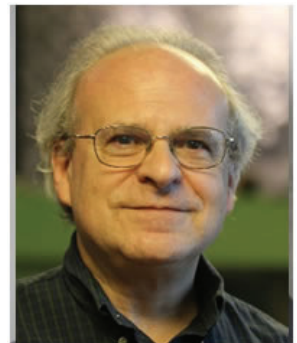
Abstract: The "Back when I was a kid" ... a half century of discovery and learning and creating. I happened to grow up just as the new digital technologies were being developed and my programming skills became more important than my ability to wield a soldering iron. I learned to program in 1963 and my first job, while still in high school was helping to create the first online financial information service in 1966. I've been online from home doing personal computing since then. This has given me the vantage from which to observe and contribute to the transformations over the last half century. It's been lots of fun but it also gives me perspective to question what we take for granted because it's all a work in progress.

Title: Bits Vs. Electronics

Abstract: Other topics from my column and other writings. I plan to post a summary of my columns at <http://rmf.vc/IEEECES>.

Bio:Bob Frankston is a fellow of the IEEE, ACM and the Computer History Museum. He is on the Board of Governors of the IEEE CE Society and writes the Bits versus Electrons column in the IEEE Consumer Electronics Magazine. He has Master's and Engineer's degrees from MIT in EE and CS. His career has been devoted to empowering people to take advantage of computing and connectivity. He wrote the first electronic spreadsheet, VisiCalc. At Microsoft he was instrumental in connecting home users with the rest of the Internet.

Area of Expertise:Software, EE, Business and much more over the last half century.



Kees Immink

Topics:

Title: **Beethoven, Shannon, and the Compact Disc**

Abstract: An audio compact disc (CD) holds up to 74 minutes, 33 seconds of sound, just enough for a complete mono recording of Ludwig von Beethoven's Ninth Symphony (Alle Menschen werden Brüder) at probably the slowest pace it has ever been played during the Bayreuther Festspiele in 1951 conducted by Wilhelm Furtwängler. Each second of music requires about 1.5 million bits, which are represented as tiny pits and lands ranging from 0.9 to 3.3 micrometers in length. More than 19 billion channel bits are recorded as a spiral track of alternating pits and lands of 5.38 kilometers (3.34 miles) scanned at walking speed, 4.27 km per hour. We will discuss the various crucial technical decisions made that would determine the technical success or failure of the new medium.

Bio: Kees Immink is president and founder of Turing Machines Inc. and an adjunct professor at the Institute for Experimental Mathematics, Essen, Germany. Immink, who obtained his Ph.D. degree from the Eindhoven University of Technology, has progressed the digital audio revolution from its very beginning. Over the course of his career, Immink has contributed to the development of a wealth of digital recording products, including the Compact Disc, DAT, DCC, DVD, and the Blu-Ray disc. Immink is recipient of the AES Gold Medal, IEEE Edison Medal, IEEE Masaru Ibuka Consumer Electronics Award, SMPTE Progress Medal, Eduard Rhein Prize, and a personal Emmy Award.

Area of Expertise: Software, EE, Business and much more over the last half century.



Ulrich Reimers

Topic:

Title: **Solutions for the Co-operation of Broadcast and Wireless Broadband**

Abstract: The author presents three systems developed by his team at Technische Universität Braunschweig (Germany) which offer solutions for the co-existence and in fact co-operation of wireless broadband and broadcast networks: Dynamic Broadcast, Tower Overlay over LTE-A+ (TOoL+), and Redundancy on Demand.

In this comprehensive presentation the latest broadcast standards developed by DVB such as DVB-S2, DVB-T2, DVB-S2, and DVB-S2x and key algorithms used in these standards are explained.



2017- 2018 Distinguished Lecturers (International):

Coming soon

2017- 2018 Distinguished Lecturers (Regional):

Coming soon

2017- 2018 CE Society Speakers:

Coming soon