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IEEE North Jersey Communications Chapter

Semantic HIFI Consortium*: Source Separation and Browsing by Lyrics on Future Hifi Systems

by Ofer Hadar, Ben Gurion University of the Negev, Israel

Date: March 29, 2006 (Wednesday)
Time: 6:15 pm (refreshment starts at 6:00pm)
Place: 202 ECEC, NJIT

About the Speaker

Ofer Hadar received the B.Sc., the M.Sc. (cum laude) and the Ph.D. degrees from the Ben-Gurion University of the Negev, Israel, in 1990, 1992, and 1997, respectively, all in electrical and computer engineering. The prestigious Clore Fellowship supported his Ph.D. studies. His Ph.D. dissertation dealt with the effects of vibrations and motion on image quality and target acquisition. From August 1996 to February 1997, he was with CREOL at Central Florida University, Orlando, FL, as a Research Visiting Scientist, working on angular dependence of sampling MTF and over-sampling MTF. From October 1997 to March 1999, he was Post-Doctoral Fellow in the Department of Computer Science at the Technion-Israel Institute of Technology, Haifa. Currently, he is a Senior Lecturer at the Communication Systems Engineering Department at Ben-Gurion University of the Negev. His research interests include: image compression, video compression, rate control, H.264 coding, packet video, transmission of video over IP networks, video rate smoothing and multiplexing, video quality measures, and signal processing in audio and Hi Fi Systems. Hadar also works as a consultant for several Hi-tech companies such as, EnQuad Technologies Ltd in the area of MPEG-4, and Scopus in the area of video compression and transmission over satellite network.
Hadar is a member of IEEE and SPIE.

About the Talk

In the context of large-scale digital music distribution, the goal of the project is to develop a new generation of HIFI systems, offering new functionality for browsing, interacting, rendering, personalizing and editing musical material. This next generation of hard-disk based HIFI systems will drastically change the home users' relationship to music and multimedia content. They will be able to interact with music, blurring the traditional limits between playing, performing and remixing. These HIFI systems will be as much open instruments as listening stations. In this seminar I will begin with a short description of the main consortium's tasks. Such as: Personalized classification and content-based management of music pieces; query by humming, automated playlist generation specified by global and content-based criteria, automatic production of musical summaries; Browsing within musical pieces through the analysis of their content: temporal maps, browsing by lyrics, advanced variable speed playback, navigation within the orchestral polyphony with spatial audio rendering, and more.
The rest of the seminar will be focused on the main tasks of BGU at the project: Source Separation and Browsing by Lyrics (BbL). Three new approaches are presented for the purpose of musical source separation and decomposition. The first is top-down analysis, in which analysis priority is given to higher notes. The second is temporal alignment of the analysis based on previous knowledge of the score. The third approach is harmonic sharing. A large number of notes in a composition share harmonics. This fact is taken into consideration. Priority is given to lower harmonics, i.e. the fundamental, and decreases towards the overtones of the note. A demonstration of source separation will be presented.
The Browsing by Lyrics main idea is to let the user play the song by following the lyrics. It gives the possibility to skip or search in the music with regards to the lyrics. Also, it is a tool to edit the time that the lyrics will show on/off. A demonstration of the functionality of browsing by lyrics will be also presented in the end of the seminar

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For more information contact Nirwan Ansari (973) 596-3670 or check **http://web.njit.edu/~ieeenj/comm.html** for latest updates. Directions to NJIT can be found at: **http://www.njit.edu/University/Directions.html**.