

KEYNOTE SPEAKERS

Recent Advances on Audio-visual Information Retrieval

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Abstract

The past decade has witnessed a phenomenal growth in the size of audio-visual digital content available not only in the hands of professionals, but also to ordinary people who are involved on a daily basis in creating and sharing digital audio-visual information. This paradigm shift from analog to digital AV content brought about new opportunities and challenges for all AV information users and providers. The main challenges consist in the management of such content in order to allow efficient search, retrieval and browsing of the information.

Traditional text-based information retrieval techniques are inefficient and biased and thus inappropriate. Therefore, alternative techniques based directly on the content of AV information had to be developed. The talk shall focus on recent advances in AV content-based information retrieval. In particular, a novel and efficient indexing scheme using hierarchical cellular trees (HCT) for audio-visual databases will be presented. In addition to its indexing capability, HCT can also be used for browsing a multimedia database. A new progressive query (PQ) scheme will also be presented. The idea is to save the user unnecessary waiting time making the retrieval process more efficient and user-friendly. The combination of HCT and PQ will prove particularly useful in retrieving the most relevant database records (most similar to the query record) first.

Several audio-visual feature extraction modules will also be reviewed and their retrieval performance will be evaluated over large audio and visual multimedia databases within the framework of TUT's content based indexing and retrieval system called MUVIS¹.

¹ <http://muvis.cs.tut.fi/>

Biography

MONCEF GABBOUJ received his BS degree in electrical engineering in 1985 from Oklahoma State University, Stillwater, and his MS and PhD degrees in electrical engineering from Purdue University, West Lafayette, Indiana, in 1986 and 1989, respectively.

Dr. Gabbouj is currently a Professor at the Department of Signal Processing at Tampere University of Technology, Tampere, Finland. He was Head of the Department during 2002-2007. Dr. Gabbouj is the co-founder and past CEO of SuviSoft Oy Ltd. From 1995 to 1998 he was a professor with the Department of Information Technology of Pori School of Technology and Economics, and during 1997 and 1998 he was a Senior Research Scientist with the Academy of Finland. From 1994 to 1995 he was an Associate Professor with the Signal Processing Laboratory of Tampere University of Technology, Tampere, Finland. From 1990 to 1993 he was a senior research scientist with the Research Institute for Information Technology, Tampere, Finland. His research interests include multimedia content-based analysis, indexing and retrieval; nonlinear signal and image processing and analysis; and video processing and coding.

Dr. Gabbouj is a *Honorary Guest Professor* of Jilin University, China (2005-2010). Dr. Gabbouj served as Distinguished Lecturer for the IEEE Circuits and Systems Society in 2004-2005, and Past-Chairman of the IEEE-EURASIP NSIP (Nonlinear Signal and Image Processing) Board. He was chairman of the Algorithm Group of the EC COST 211quat. He served as associate editor of the *IEEE Transactions on Image Processing*, and was guest editor of Multimedia Tools and Applications, the European journal *Applied Signal Processing*. He is the past chairman of the IEEE Finland Section, the IEEE Circuits and Systems Society, Technical Committee on Digital Signal Processing, and the IEEE SP/CAS Finland Chapter. He was also Chairman of CBMI 2005, WIAMIS 2001 and the TPC Chair of ISCCSP 2006 and 2004, CBMI 2003, EUSIPCO 2000, NORSIG 1996 and the DSP track chair of the 1996 IEEE ISCAS. He is also member of EURASIP Advisory Board and past member of AdCom. He also served as Publication Chair and Publicity Chair of IEEE ICIP 2005 and IEEE ICASSP 2006, respectively.

Dr. Gabbouj was the Director of the International University Programs in Information Technology (1991-2007) and vice member of the Council of the Department of Information Technology at Tampere University of Technology. He is also the Vice-Director of the Academy of Finland Center of Excellence SPAG, Secretary of the International Advisory Board of Tampere International Center of Signal Processing, TICSP, and member of the Board of the Digital Media Institute. He served as Tutoring Professor for Nokia Mobile Phones Leading Science Program 2005-2007 and 1998-2001). He is a member of IEEE SP and CAS societies.

Dr. Gabbouj was the recipient of the 2005 Nokia Foundation Recognition Award and co-recipient of the Myril B. Reed Best Paper Award from the 32nd Midwest Symposium on Circuits and Systems and co-recipient of the NORSIG 94 Best Paper Award from the 1994 Nordic Signal Processing Symposium. He is co-author of 350 publications.

Dr. Gabbouj has been involved in several past and current EU Research and education projects and programs, including ESPRIT, HCM, IST, COST, Tempus and Erasmus. He also served as Evaluator of IST proposals, and Auditor of a number of ACTS and IST projects on multimedia security, augmented and virtual reality, image and video signal processing. Dr. Gabbouj is currently on sabbatical leave at the American University of Sharjah, UAE, and Senior Research Fellow of the Academy of Finland.