Athanasios Mouchtaris

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Research Interests

Digital Signal Processing for Multimedia Signals: Synthesis and transmission of immersive environments, content-based processing, signal enhancement.
Statistical Signal Processing: Parameter and system identification for digital signals, modeling of multimedia signals, adaptive digital filter design.
Applications in Audio and Speech: Immersive/multichannel audio transmission, immersive audio rendering, speech synthesis and speech enhancement.

Education

1999 – 2003 **Ph.D., Electrical Engineering**.
University of Southern California (USC).
Thesis: "Time-frequency and adaptive signal processing methods for immersive audio virtual acquisition and rendering".

1997 – 1999 **M.S., Electrical Engineering**.
University of Southern California.

1992 – 1997 **Diploma (5 year program), Electrical Engineering**.
Aristotle University of Thessaloniki, Greece.
Ranked 6th out of 169.
Thesis: "Traffic load demands for multimedia over the Internet".

Employment

2009 – Present **Assistant Professor,** *Computer Science Department, University of Crete, Greece***.**

2004 – Present **Affiliated Researcher,** *Institute of Computer Science (ICS), Foundation for Research and Technology – Hellas (FORTH)***.**

2005 – 2008 **Visiting Assistant Professor,** *Computer Science Department, University of Crete, Greece***.**

07/06 – 08/06 **Visiting Researcher,** *Electrical Engineering – Systems Department, USC***.**

2003 – 2004 **Postdoctoral Researcher,** *Electrical and Systems Engineering Department, University of Pennsylvania***.**

1997 – 2003 **Research Assistant,** *Integrated Media Systems Center (IMSC) Immersive Audio Laboratory, USC***.**

06/99 – 08/99 **Research Intern,** *Philips Research, Briarcliff Manor, NY.*

1997 – 1999 **Teaching Assistant,** *Electrical Engineering – Systems Department, USC***.**

Research Experience

2004 – Present **Affiliated Researcher**, *Institute of Computer Science, Foundation for Research and Technology – Hellas*.
Proposed novel models for multichannel audio that offer high-quality resynthesis of the multiple audio channels from a smaller set of reference channels. Proposed methods for music classification/retrieval in large music databases, using novel approaches for the audio modeling and statistically optimal measures of distance. Research on novel methods for voice conversion and speech synthesis. Research on use of sparse representations and compressed sensing for audio and speech signals with applications in audio coding and speaker identification.

07/06 – 08/06 **Visiting Researcher,** *Electrical Engineering – Systems Department, USC***.**
Development of voice conversion methods (segmental and supra-segmental level) for speech synthesis. Emphasis on real-time applications (using C/C++).

2003 – 2004 **Postdoctoral Researcher**, *Electrical and Systems Engineering Department, University of Pennsylvania*.
Proposed voice conversion methods for speech synthesis which do not require a parallel training speech corpus. The objective is to design a system that converts the speech of a source speaker into a different target speaker. Previous algorithms for voice conversion imposed the requirement of a parallel training speech corpus (same sentences spoken by the two speakers for system training), which is too restrictive in practice. Proposed algorithm for enhancement of speech in additive noise, based on the developed non-parallel voice conversion algorithm. Proposed a novel design and implementation for the software and hardware parts of an auditory-based front-end for speech recognition.

1999 – 2003 **Research Assistant**, *Integrated Media Systems Center (IMSC) Immersive Audio Laboratory, USC.*
Proposed virtual acquisition techniques that are capable of synthesizing the required – for multichannel rendering – multiple microphone signals from a smaller set of existing audio signals. These "virtual microphone" methods can be used to convert existing stereophonic recordings into multichannel recordings that accurately recreate the spatial realism of an arbitrary venue and microphone setting.

6/99 – 8/99 **Research Intern**, *Philips Research, Briarcliff Manor, NY*.
Developed and implemented a client-server application for e-commerce purposes using JAVA. Investigated current standards for Digital Television enhanced user services.

1997 – 1999 **Research Assistant**, *Integrated Media Systems Center (IMSC) Immersive Audio Laboratory, USC.*
Examined certain key signal processing considerations in spatial sound rendering over headphones and loudspeakers. Addressed the problem of crosstalk, inherent in loudspeaker rendering, and examined adaptive methods for efficient implementation of crosstalk cancellation and loudspeaker response inversion.

Teaching Experience

2005 – Present *Computer Science Department, University of Crete, Greece***.**
Responsible for teaching the courses *Digital Audio Signal Processing (graduate level)*, *Statistical Signal Processing (graduate level), Multimedia Systems (undergraduate level), Pattern Recognition (undergraduate level), Infinitesimal Calculus (undergraduate level)*.

1997 – 1998 *Electrical Engineering Department, USC.*
Teaching Assistant for courses *Introduction to Integrated Media Systems, Probability Theory for Engineers, Digital Media Basics for Multimedia*. Duties included giving weekly lectures (discussion sessions), holding office hours for answering students' questions, grading and preparing exams and homeworks.

Advising Experience

2004 – Present *Computer Science Department, University of Crete and Institute of Computer Science, Foundation for Research and Technology – Hellas*.
Advisor, of following students of the Computer Science Department, University of Crete (1) Christos Tzagkarakis for his PhD studies (Feb 2008 – Currently), (2) Georgia Tryfou for her MS thesis (Sep 2008 – Currently), (3) Elena Karamichali for her MS thesis (Sep. 2008 – Oct.2010), (4) Despoina Pavlidi for her MS thesis (Feb. 2010 – Currently), (5) Andreas Koutrouvelis for his Diploma thesis (Oct. 2010 – Currently).
Co-advisor (with Prof. Tsakalides) of the following students of the Computer Science Department, University of Crete (a) Kiki Karadimou for her Master's Thesis on novel methods for multichannel audio efficient coding and compression (Sept. 2004 – Nov. 2005), (b) Christos Tzagarakis for his Diploma Thesis on novel methods for audio classification and retrieval (Sept. 2004 – June 2005), (c) Christos Tzagarakis, for his Master's Thesis on multichannel audio modeling (Sept. 2005 – Dec. 2007).
Participated in the PhD committees of (a) Michalis Polychronakis (Oct. 2009), (b) Andre Holzapfel (Mar. 2010), (c) Yannis Pantazis (Jul. 2010).

2003 – 2004 *Electrical and Systems Engineering Department, University of Pennsylvania*.
Co-advised (with Prof. Van der Spiegel) 2 undergraduate students (a) Cao Yuan for his Senior Design Project *Real-time implementation of digital filters for human cochlea modeling.* This is a 2-semester course that gives the opportunity to senior students of Electrical Engineering at UPenn to integrate and expand their education within a research-like environment, (b) Shehzad Khan for a one-semester directed research project, who continued the work of Cao Yuan on a combined software - hardware implementation of a filterbank model of the human cochlea.

Research Funding

Participation in the proposal preparation, and project research and management activities, of the following research projects.

2009 – 2013 *FP7-PEOPLE-IAPP (Industry – Academia Partnerships and Pathways), 7th Framework Programme, European Union.*
Efficient Location-Aware Audio-Visual Delivery of High-Quality to Mobile Devices €1,323,240, Coordinator: A. Mouchtaris. Consortium: FORTH (Greece), TWS (Italy), Cidana (China), University of Thessaly (Greece).

2006 – 2009 *Marie Curie Transfer of Knowledge (ToK), 6th Framework Programme, European Union*.
Collaborative Signal Processing for Efficient Wireless Sensor Networks, €1,250,000, PI: P. Tsakalides.

2006 – 2007 *General Secretariat for Research and Technology (GSRT).*
User-Centric Enhancement of Speech in Adverse Noise Conditions with Applications to Speech Communication Systems, €60,000, PI: P. Tsakalides.

2005 – 2007 *Marie Curie International Reintegration Grants (IRG), 6th Framework Programme, European Union*.
Immersive Audio Rendering and Transmission Technologies, €80,000, PI: P. Tsakalides.

2004 –2006 *General Secretariat of Research and Technology (GSRT), Greece*.
Co-PI (PI: P. Tsakalides) *3-D Audio Synthesis and Transmission through Wireless Networks for Teleconferencing and Telepresence Applications,* €91,500, PI: P. Tsakalides.

Distinctions – Awards

Recipient, Marie Curie Fellowship, European Union, 2005-2006.

Recipient, International Student Outstanding Academic Achievement Award, USC, Spring 1999 and 2003.

Recipient, Graduate Assistantship, Electrical Engineering – Systems Department, USC, Fall 1997 – 2003.

Recipient, Myronis Fellowship, USC Graduate School, 2001-2002.

Recipient, Phi Beta Kappa Alumni (Alpha Association) International Scholarship Award, 2000-2001.

Affiliations/ Activities

Member, Institute of Electrical and Electronics Engineers (IEEE).

Member, Technical Chamber of Greece (TEE).

Voting Member, IEEE Communication Society Multimedia Communications Technical Committee (IEEE MMTC).

Session Chair, European Signal Processing Conference (EUSIPCO), Aalborg, Denmark, August 23-27, 2010, Session on Compressed Sensing.

Reviewer, IEEE Transactions on Audio, Speech, and Language Processing.

Reviewer, IEEE Transactions on Multimedia.

Reviewer, IEEE Transactions on Computers.

Reviewer, IEEE Signal Processing Letters.

Reviewer, Journal of Circuits, Systems, and Computers.

Reviewer, Elsevier Neurocomputing Journal.

Reviewer, Elsevier Computer Speech and Language Journal.

Reviewer, EURASIP Journal on Audio, Speech, and Music Processing.

Reviewer, EURASIP Journal on Applied Signal Processing.

Reviewer, EURASIP Journal on Advances in Signal Processing.

Associate Reviewer, *IEEE* International Conference on Acoustics, Speech, and Signal Processing (ICASSP, annually).

Reviewer, European Signal Processing Conference (EUSIPCO).

Reviewer, IEEE Digital Signal Processing Conference (DSP).

Reviewer, EUROPAR 2006, European Conference on Parallel Computing.

Invited Lectures

"Multichannel audio coding activities in FORTH-ICS", Universidad de Valencia, Valencia, Spain, July 2009.

"Parametric Modeling of Audio Signals for Multichannel and Immersive Audio Coding", Department of Computer Science, University of Crete, Heraklion, Crete, March 2007.

"The Multiband Source/Filter Model for Multichannel Audio Coding", Hellenic Conference on Acoustics, September 2006.

"Linear Prediction and Its Statistical Transformations Applied to Speech and Audio Signals", Department of Electrical Engineering, University of Pennsylvania, Philadelphia, PA, June 2006.

"Linear Prediction and Its Statistical Transformations Applied to Audio Signals", Department of Electrical and Computer Engineering, School of Engineering, Democritus University of Thrace, Xanthi, May 2006.

"Linear Prediction and Its Statistical Transformations Applied to Speech and Audio Signals", Department of Computer Science, University of Crete, Heraklion, Crete, April 2006.

Research Activities in the Networks and Telecommunications Lab at FORTH-ICS", Students Information Meeting of the University of Crete, Heraklion, Crete, May 2006.

"Voice Transformation," Workshop on Non-linear Speech Processing (WNSP 2005), Invited Speaker, Heraklion, Crete, September 2005.

"Voice Conversion for Speech Synthesis and Applications to Immersive Audio Environments," Department of Computer Science, University of Ioannina, May 2005.

"Virtual Microphones and Virtual Loudspeakers for Immersive Audio Environments," Department of Computer Science, University of Piraeus, April 2005.

"Voice Conversion for Speech Synthesis and Applications to Immersive Audio Environments," Department of Electronic and Computer Engineering, Technical University of Crete, Chania, Crete, Greece, January 2005.

"Virtual Microphones for Immersive Audio and Enhanced Reality Experiences," Foundation of Research and Technology Hellas (FORTH), Heraklion, Crete, Greece, May 2004.

"Virtual Microphones for Immersive Audio and Enhanced Reality Experiences," Arts and Media Engineering Program, Arizona State University, Tempe, AZ, April 2004.

Publications

Book Chapters

B2 A. Mouchtaris and P. Tsakalides, "Low Bitrate Coding of Spot Audio Signals for Interactive and Immersive Audio Applications," in *New Directions in Intelligent Interactive Multimedia,* ISBN: 978-3-540-68126-7, Springer, 2008.

B1 A. Mouchtaris and P. Tsakalides, "Multichannel Audio Coding for Multimedia Services in Intelligent Environments," in *Multimedia Services in Intelligent Environments,* G. A. Tsihrintzis and L. Jain Eds., ISBN: 978-3-540-78491-3, Springer, 2008.

Refereed Journal Publications

J11 T. Hirvonen and A. Mouchtaris, "Psychoacoustic Masking in Audio Object Coding," submitted *Journal of the Audio Engineering Society*.

J10 A. Griffin, T. Hirvonen, C. Tzagkarakis, A. Mouchtaris, and P. Tsakalides, "Single-Channel and Multi-Channel Sinusoidal Audio Coding Using Compressed Sensing," *IEEE Trans. Audio, Speech, and Language Processing (in press).*

J9 C. Tzagkarakis, A. Mouchtaris, and P. Tsakalides, "Modeling and Coding of Spot Microphone Signals for Immersive Audio Based on the Sinusoidal Model," *IEEE Trans. Audio, Speech, and Language Processing*, vol. 18, no. 8, Nov. 2009.

J8 D. Cantzos, A. Mouchtaris, and C. Kyriakakis, "Quality Enhancement of Compressed Audio Based on Statistical Conversion," *EURASIP Journal on Audio, Speech, and Music Processing*, vol. 2008, Article ID 462830, 15 pages doi:10.1155/2008/462830.

J7 A. Mouchtaris, K. Karadimou, and P. Tsakalides, "Multiresolution Source/Filter Model for Low Bitrate Multichannel Audio Coding," *EURASIP Journal on Audio, Speech, and Music Processing*, vol. 2008, Article ID 624321, 16 pages doi:10.1155/2008/624321.

J6 A. Kardamakis, A. Mouchtaris, and N. Pasadakis, "Linear predictive spectral coding and independent component analysis in identifying gasoline constituents using infrared spectroscopy," *Chemometrics and Intelligent Laboratory Systems*, vol. 89 (1), October 2007, pp. 51-58.

J5 A. Mouchtaris, J. Van der Spiegel, P. Mueller, and P. Tsakalides, "A Spectral Conversion Approach to Single Channel Speech Enhancement," *IEEE Trans. Audio, Speech and Language Processing*, vol. 15, no. 4, May 2007, pp. 1180-1193.

J4 A. Mouchtaris, J. Van der Spiegel, and P. Mueller, "Non-Parallel Training for Voice Conversion Based on a Parameter Adaptation Approach," *IEEE Trans. Audio, Speech and Language Processing*, vol. 14, no. 3, May 2006, pp. 952-963.

J3 A. Mouchtaris, S. S. Narayanan, and C. Kyriakakis, "Multichannel Audio Synthesis by Subband-Based Spectral Conversion and Parameter Adaptation," *IEEE Trans. Speech and Audio Processing*, vol. 13, no. 2, March 2005.

J2 A. Mouchtaris, S. S. Narayanan, and C. Kyriakakis, "Virtual Microphones for Multichannel Audio Resynthesis," *EURASIP Journal on Applied Signal Processing (JASP)*, Special Issue on Digital Audio for Multimedia Communications, vol. 2003:10, pp. 968-979, September 2003.

J1 A. Mouchtaris, P. Reveliotis, and C. Kyriakakis, "Inverse Filter Design for Immersive Audio Rendering Over Loudspeakers," *IEEE Trans. Multimedia*, vol. 2, no. 2, pp. 77-87, June 2000.

Refereed Conference Publications

C37 T. Hirvonen and A. Mouchtaris, "On the Multichannel Sinusoidal Model for Coding Audio Object Signals," accepted to appear in Proc. *130th Convention of the Audio Engineering Society (AES)*, London, UK, May 13-16, 2011.

C36 A. Griffin, T. Hirvonen, A. Mouchtaris and P Tsakalides, "Multichannel Audio Coding Using Sinusoidal Modelling and Compressed Sensing," in Proc. *European Signal Processing Conference (EUSIPCO)*, Aalborg, Denmark, August 23-27, 2010, 1439-1443.

C35 A. Griffin, E. Karamichali, and A. Mouchtaris, "Speaker Identification Using Sparsely Excited Speech Signals and Compressed Sensing," in Proc. *European Signal Processing Conference (EUSIPCO)*, Aalborg, Denmark, August 23-27, 2010, pp. 1444-1448.

C34 C. Tzagkarakis and A. Mouchtaris, "Robust Text-Independent Speaker Identification Using Short Test and Training Sessions," in Proc. *European Signal Processing Conference (EUSIPCO)*, Aalborg, Denmark, August 23-27, 2010, pp. 586-590.

C33 T. Hirvonen and A. Mouchtaris, "Sinusoidal Spatial Audio Coding for Low-Bitrate Binaural Reproduction," in Proc. *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP),* Dallas, TX, March 14-19, 2010, pp. 389-392.

C32 T. Hirvonen and A. Mouchtaris, "Top-down Strategies in Parameter Selection of Sinusoidal Modeling of Audio," in Proc. *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP),* Dallas, TX, March 14-19,

2010, pp. 273-276.

C31 A. Griffin, T. Hirvonen, A. Mouchtaris, and P. Tsakalides, "Encoding the Sinusoidal Model of an Audio Signal Using Compressed Sensing," in Proc. *IEEE International Conference on Multimedia (ICME),* New York, NY, June 28 – July 3, 2009, pp. 153-156.

C30 D. Cantzos, A. Mouchtaris, and C. Kyriakakis, "Bandwidth Extension of Low Bitrate Compressed Audio Based on Statistical Conversion," in Proc. *IEEE International Conference on Multimedia (ICME),* New York, NY, June 28 – July 3, 2009, pp. 97-100.

C29 A. Griffin, C. Tzagkarakis, T. Hirvonen, A. Mouchtaris, and P. Tsakalides, "Exploring the Sparsity of the Sinusoidal Modeled for Audio Coding Using Compressed Sensing," in Proc. *Workshop on Signal Processing with Adaptive Sparse Structured Representations (SPARS),* Saint Malo, France, April 6-9, 2009.

C28 C. Tzagkarakis, A. Mouchtaris, and P. Tsakalides, "Modeling and Coding of Spot Microphone Signals for Immersive Audio Based on the Sinusoidal Model," in Proc. *European Signal Processing Conference (EUSIPCO)*, Lausanne, Switzerland, August 25-29, 2008.

C27 D. Cantzos, A. Mouchtaris, and C. Kyriakakis, "Synthesis of enhanced audio from low bitrate compressed audio based on unit selection and statistical conversion methods," in Proc. *IEEE Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, Oct.26-29 2008, pp. 2174-2179.

C26 A. Mouchtaris, C. Tzagkarakis, and P. Tsakalides, "Low Bitrate Coding of Spot Audio Signals for Interactive and Immersive Audio Applications," in *Proc. International Symposium on Inteligent Interactive Multimedia Systems and Services (KES-IIMSS '08),* University of Piraeus, Greece, July 9-11, 2008.

C25 C. Tzagkarakis, A. Mouchtaris, and P. Tsakalides, ""Modeling Spot Microphone Signals using the Sinusoidal Plus Noise Approach," in Proc. *IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA),* New Paltz, NY, October 21-24, 2007.

C24 C. Tzagkarakis, A. Mouchtaris, and P. Tsakalides, "Sinusoidal Modeling of Multichannel Audio Based on Noise Transplantation," in Proc. *European Signal Processing Conference (EUSIPCO),* Poznan, Poland, September 3-7, 2007.

C23 D. Cantzos, A. Mouchtaris, and C. Kyriakakis, "Enhanced Multichannel Audio Resynthesis through Residual Processing and Features Alignment," in Proc. *IEEE International Conference on Multimedia and Expo (ICME)*, Beijing, China, July 2-5, 2007, pp. 1267-1270.

C22 A. Mouchtaris, Y. Agiomyrgiannakis, and Y. Stylianou, "Conditional Vector Quantization for Voice Conversion," in Proc. *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP),* Honolulu, HI, April 15-20, 2007, pp. IV.505-IV.508.

C21 K. Karadimou, A. Mouchtaris, and P. Tsakalides, "Packet Loss Concealment for Multichannel Audio Using the Multiband Source/Filter Model," in Proc. *Asilomar Conf. on Signals, Systems, and Computers,* Pacific Grove, CA, November 2006, pp. 1105-1109.

C20 A. Mouchtaris, K. Karadimou, and P. Tsakalides, "Multiband Source/Filter Representation of Multichannel Audio for Reduction of Inter-channel Redundancy," in Proc. *14th European Signal Processing Conference (EUSIPCO)*, September 4-8, 2006, Florence, Italy, Paper 0243.

C19 C. Tzagkarakis, A. Mouchtaris, and P. Tsakalides, "Musical Genre Classification via Generalized Gaussian and Alpha-Stable Modeling," in Proc. *International Conference on Acoustics, Speech, and Signal Processing (ICASSP),* Toulouse, France, May 14-19, 2006, pp. V-217-V.220.

C18 K. Karadimou, A. Mouchtaris, and P. Tsakalides, "Multichannel Audio Modeling and Coding Using a Multiband Source/Filter Model," in Proc. *39th Asilomar Conference on Signals, Systems& Computers*, Pacific Grove, CA, Nov. 2005, pp. 907-911.

C17 A. Mouchtaris, Y. Cao, S. Khan, J. Van der Spiegel, and P. Mueller, "Combined Software/Hardware Implementation of a Filterbank Front-End for Speech Recognition," in Proc. *IEEE Workshop on Signal Processing Systems (SIPS)*, November 2005, pp. 436-441.

C16 D. Cantzos, A. Mouchtaris, and C. Kyriakakis, "Multichannel Audio Resynthesis Based on a Generalized Gaussian Mixture Model and Cepstral Smoothing," in Proc. *IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA)*, October 2005, pp. 215-218.

C15 A. Mouchtaris, J. Van der Spiegel, P. Mueller, and P. Tsakalides, "A Spectral Conversion Approach to Feature Denoising and Speech Enhancement," in Proc. *9th European Conference on Speech Communication and Technology (EUROSPEECH)*, Lisbon, Portugal, September 2005, pp. 2057-2060.

C14 A. Mouchtaris, J. Van der Spiegel, and P. Mueller, "A Spectral Conversion Approach to the Iterative Wiener Filter for Speech Enhancement," in Proc. *IEEE International Conference on Multimedia and Expo (ICME)*, Taipei, June 2004.

C13 A. Mouchtaris, J. Van der Spiegel, and P. Mueller, "Non-Parallel Training for Voice Conversion by Maximum Likelihood Constrained Adaptation," in Proc. *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Montreal, Canada, May 2004, vol. 1, pp. 1-4.

C12 A. Mouchtaris, S. S. Narayanan, and C. Kyriakakis, "Maximum Likelihood Constrained Adaptation for Multichannel Audio Synthesis," in Proc. *36th Asilomar Conference on Signals, Systems & Computers*, Pacific Grove, CA, Nov. 2002, vol. 1, pp. 227-232.

C11 A. Mouchtaris, S. S. Narayanan, and C. Kyriakakis, "GMM-Based Methods for Multichannel Audio Synthesis," in Proc. *113th Convention of the Audio Engineering Society (AES)*, Paper 5647, Los Angeles, CA, Oct. 2002.

C10 A. Mouchtaris, S. S. Narayanan, and C. Kyriakakis, "Efficient Multichannel Audio Resynthesis by Subband-Based Spectral Conversion," in *Proc. European Signal Processing Conference (EUSIPCO)*, Toulouse, France, Sept. 2002, vol. 1, pp. 413-416.

C9 A. Mouchtaris, S. S. Narayanan, and C. Kyriakakis, "Multiresolution Spectral Conversion for Multichannel Audio Resynthesis," in *Proc. IEEE International Conference on Multimedia and Expo (ICME)*, Lausanne, Switzerland, Aug. 2002, vol. 2, pp. 273-276.

C8 A. Mouchtaris and C. Kyriakakis, "Time-Frequency Methods for Virtual Microphone Signal Synthesis," in *Proc. 111th Convention of the Audio Engineering Society (AES)*, Paper 5416, New York, NY, Nov. 30 – Dec. 3 2001.

C7 P. G. Georgiou, A. Mouchtaris, S. I. Roumeliotis, and C. Kyriakakis, "Immersive Sound Rendering Using Laser-Based Tracking," in *Proc. 109th Convention of the Audio Engineering Society (AES)*, Paper 5227, Los Angeles, CA, Sept. 2000.

C6 C. Kyriakakis and A. Mouchtaris, "Virtual Microphones for Multichannel Audio Applications," in *Proc. IEEE International Conference on Multimedia and Expo (ICME)*, New York, NY, July 2000, vol. 1, pp. 11-14.

C5 A. Mouchtaris, Z. Zhu, and C. Kyriakakis, "High-Quality Internet Audio over ATM Networks," in *Proc. 33rd Asilomar Conference on Signals, Systems & Computers*, Pacific Grove, CA, Oct. 1999, pp. 347-351.

C4 A. Ossadtchi, A. Mouchtaris, and C. Kyriakakis, "Immersive Audio Rendering on the TI C62 DSP Platform," Texas Instruments DSPFest, Houston, TX, August, 1999.

C3 A. Mouchtaris, P. Reveliotis, and C. Kyriakakis, "Non-minimum Phase Inverse Filter Methods for Immersive Audio Rendering," in *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Phoenix, AZ, March 1999, pp. 3077-3080.

C2 A. Mouchtaris, J.-S. Lim, T. Holman, and C. Kyriakakis, "Signal Processing Considerations for Immersive Audio Rendering," in *Proc. 10th Tyrrhenian Conference on Multimedia Communications*, Ischia, Italy, 1998.

C1 A. Mouchtaris, J.-S. Lim, T. Holman, and C. Kyriakakis, "Head-Related Transfer Function Synthesis for Immersive Audio," in *Proc. IEEE Second Workshop on Multimedia Signal Processing*, Redondo Beach, CA, Dec. 1998, pp. 155-160.

Other Publications

O2 A. Mouchtaris and P. Tsakalides, "The ASPIRE Project - Sensor Networks for Immersive Multimedia Environments," in *ERCIM News*, no. 78, pp. 38-39, July 2009.

O1 A. Mouchtaris and P. Tsakalides, "Integrating WSN into the Fabric of the Future," *e-Strategies Projects*, no. 8, pp. 18-20, December 2008.