
Michael W. Macon

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- Research interests** Dr. Macon's research interests lie in the areas of speech synthesis and digital signal processing. He has worked in both academic and industrial environments in the areas of speech synthesis, speech and audio coding, and music synthesis. His work is currently directed toward the development of algorithms for high-quality speech synthesis using trainable, data-driven techniques.
- Education** **Ph.D., Electrical Engineering**, GEORGIA INSTITUTE OF TECHNOLOGY, Atlanta, GA, 1996
- M.S., Electrical Engineering**, GEORGIA INSTITUTE OF TECHNOLOGY, 1993
(completed coursework at GEORGIA TECH LORRAINE in Metz, France.)
- Bach. Electrical Engineering**, UNIVERSITY OF DAYTON, Dayton, OH
- Professional experience** OREGON GRADUATE INSTITUTE, Portland, OR
Dept. of Electrical Engineering/Dept. of Computer Science and Engineering
Position: Assistant Professor, November 1996 – present
Research and teaching in the areas of speech processing and digital signal processing.
- GEORGIA INST. OF TECHNOLOGY - SCHOOL OF ECE, Atlanta, GA
Position: Teaching Assistant, Sept. 1991 – Oct. 1996
Assisted graduate-level courses in signal processing
- BRITISH TELECOM - SPEECH SYNTHESIS AND ANALYSIS LAB, United Kingdom
Position: Research Fellow, December 1995
Research project: Speech synthesis methods in the *Laureate II* text-to-speech system.
- TEXAS INSTRUMENTS - CORPORATE R&D, SIGNAL PROCESSING BRANCH, Dallas, TX
Position: Summer Research Intern, June – Sept. 1995
Development of 2400 bps speech coding simulation, low-cost music analysis/synthesis methods.
- LOCKHEED SANDERS - SIGNAL PROCESSING CENTER OF TECHNOLOGY, Nashua, NH
Position: Summer Research Intern, June – Sept. 1994
Sinusoidal modeling research, development of real-time 2400 bps vocoder.
- MOTOROLA PAGING PRODUCTS GROUP, Boynton Beach, FL
Position: Electrical Engineer II, June – Sept. 1993
Development of image processing algorithms for fax-based paging device
- Affiliations** Associate Editor of *IEEE Transactions on Speech and Audio Processing*. Reviewer for journals *Speech Communication* and *Computer, Speech, and Language*. Member of the IEEE, the European Speech Communication Association (ESCA), the Acoustical Society of America, and Tau Beta Pi.
- Awards** - NSF Faculty Early Career Development (CAREER) award, 1999
- Sigma Xi Outstanding Ph.D. Thesis Award, Georgia Tech, 1996
- Presidential Fellowship, Georgia Tech, 1991–1994
- Marianist Scholarship, Mumma Foundation Scholarship, University of Dayton, 1986–1991

**Journal
Articles**

M. W. Macon and M. A. Clements, "Sinusoidal modeling and modification of unvoiced speech," *IEEE Transactions on Speech and Audio Processing*, Vol. 5, No. 6, pp. 557-560, November 1997.

F. Kossentini, M. W. Macon, and M. J. T. Smith, "Audio coding using variable-depth multi-stage quantization," *IEEE Transactions on Speech and Audio Processing*, Vol. 6, No. 2, pp. 186-188, March 1998.

**Book
Chapters**

M. W. Macon, A. E. Cronk, and J. Wouters, "Generalization and Discrimination in Unit Selection," to appear as chapter in *Progress in Speech Synthesis*, N. Campbell editor, 1999 (in preparation).

A. Kain and M. W. Macon, "Voice Conversion for Text-to-Speech Synthesis," to appear as chapter in *Progress in Speech Synthesis*, N. Campbell editor, 1999 (in preparation).

**Conference
Publications**

M. W. Macon, A. E. Cronk, and J. Wouters, "Generalization and discrimination in tree-structured unit selection," *Proceedings of the 3rd ESCA/COCOSDA International Speech Synthesis Workshop*, pp. 195-200, November 1998.

A. Kain and M. W. Macon, "Personalizing a speech synthesizer by voice adaptation," *Proceedings of the 3rd ESCA/COCOSDA International Speech Synthesis Workshop*, pp. 225-230, November 1998.

A. E. Cronk and M. W. Macon, "Optimization of stopping criteria for tree-structured unit selection," *Proc. of International Conference on Spoken Language Processing*, Vol. 5, pp. 1951-1954, November 1998.

A. Kain and M. W. Macon, "Text-to-speech voice adaptation from sparse training data," *Proc. of the International Conference on Spoken Language Processing*, pp. 2847-2850, November 1998.

J. Wouters and M. W. Macon, "A Perceptual Evaluation of Distance Measures for Concatenative Speech Synthesis," *Proc. of the International Conference on Spoken Language Processing*, November 1998.

S. Sutton, R. Cole, J. de Villiers, J. Schalkwyk, P. Vermeulen, M. Macon, Y. Yan, E. Kaiser, B. Rundle, K. Shobaki, P. Hosom, A. Kain, J. Wouters, D. Massaro, M. Cohen, "Universal speech tools: the CSLU Toolkit," *Proc. of the International Conference on Spoken Language Processing*, pp. 3221-3224, November 1998.

Ron Cole, Tim Carmell, Pam Connors, Mike Macon, Johan Wouters, Jacques de Villiers, Alice Tarachow, Dominic Massaro, Michael Cohen, Jonas Beskow, Jie Yang, Uwe Meier, Alex Waibel, Pat Stone, George Fortier, Alice Davis, and Chris Soland. "Intelligent animated agents for interactive language training." In *STiLL: ESCA Workshop on Speech Technology in Language Learning*, Stockholm, Sweden, May 1998.

A. Kain and M. W. Macon, "Spectral voice conversion for text-to-speech synthesis," *Proc. of the International Conference on Acoustics, Speech, and Signal Processing*, Vol. 1, pp. 285-288, 1998.

M. W. Macon, A. McCree, W. M. Lai, and V. Viswanathan, "Efficient Analysis/Synthesis of Percussion Musical Instrument Sounds using an All-Pole Model," *Proc. of the International Conference on Acoustics, Speech, and Signal Processing*, Vol. 4., pp. 3589-3593, May 1998.

M. W. Macon, L. Jensen-Link, J. Oliverio, M. Clements, and E. B. George, "Concatenation-based MIDI-to-singing voice synthesis," *103rd Meeting of the Audio Engineering Society*, New York, September 1997.

M. W. Macon, L. Jensen-Link, *et al.* "A system for singing voice synthesis based on sinusoidal modeling," *Proc. of International Conference on Acoustics, Speech, and Signal Processing*, Vol. 1, pp. 435-438, 1997.

M. W. Macon and M. A. Clements, "Speech concatenation and synthesis using an overlap-add sinusoidal model," *Proc. of the International Conference on Acoustics, Speech, and Signal Processing*, Vol. 1, pp 361-364, May 1996.

F. Kossentini, M. W. Macon, and M. J. T. Smith, "Audio coding using variable-depth multi-stage quantization," *Data Compression Conference*, Snowbird, UT, April 1996

M. W. Macon and M. A. Clements, "Speech synthesis based on an overlap-add sinusoidal model," *J. of the Acoustical Society of America*, pp. 3246, Vol. 97, No. 5, Pt. 2, May 1995. (A)

Invited Talks

M. W. Macon, "Waveform models for data-driven speech synthesis," Invited Paper, 137th meeting of the Acoustical Society of America, Berlin, March 1999. Abstract published in *J. of the Acoustical Society of America*, pp. 1031, Vol. 105, No. 2, Pt. 2, February 1999.

Technical Reports

M. W. Macon, A. Kain, A. E. Cronk, H. Meyer, K. Mueller, B. Saeuberlich, and A. W. Black, "Rapid Prototyping of a German TTS System," Tech. Rep. CSE-98-015, Department of Computer Science, Oregon Graduate Institute of Science and Technology, Portland, OR, September 1998. available from www.cse.ogi.edu/CSLU/tts.

M. Macon, A. Cronk, J. Wouters, and A. Kain, "OGIresLPC: Diphone synthesiser using residual-excited linear prediction," Tech. Rep. CSE-97-007, Department of Computer Science, Oregon Graduate Institute of Science and Technology, Portland, OR, September 1997. available from www.cse.ogi.edu/CSLU/tts.

E. B. George and M. W. Macon, "Final Report, LYRICOS: Synthesis of singing voice using a sinusoidal model, Part 1 of 2: Conceptual Overview," Texas Instruments Corporation Technical Report, September 1996.

E. B. George and M. W. Macon, "Final Report, LYRICOS: Synthesis of singing voice using a sinusoidal model, Part 2 of 2: Code Details," Texas Instruments Corporation Technical Report, September 1996.

M. W. Macon and M. A. Clements, Final Report: "Improvements to the ABS/OLA Sinusoidal Model," Lockheed Sanders, Inc., June 1995.

M. W. Macon and M. A. Clements, Final Report: "Sinusoidal Modeling and Coding of Wide-band Audio Signals," Georgia Center for Advanced Telecommunications Technology, June 1994.

Patent Applications

E. B. George, M. W. Macon, L. Jensen-Link, J. Oliverio, and M. Clements, "Singing Voice Synthesis," Texas Instruments US patent submission TI-25698, 1997.

M. W. Macon, A. McCree, W. M. Lai, and V. Viswanathan, "Synthesis of Percussion Musical Instrument Sounds," Texas Instruments US patent submission TI-21659, 1997.