

Matti Karjalainen

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CURRICULUM VITAE

Excerpts of personal data and professional history:

Born:	Hankasalmi, Finland, April 2, 1946.
M.Sc. (Dipl.Eng.)	Tampere University of Technology, 1970 in Electrical Engineering (topic: Electronic Engineering)
Lic. Tech.	Tampere University of Technology, 1974 in Electrical Engineering (topic: Audio Equalizer Design)
Dr. Tech. (PhD)	Tampere University of Technology, 1978 in Electrical Engineering (topic: Speech Synthesis by Rule in Finnish) With honors
Associate professor	Helsinki University of Technology, 1980-86 in Acoustics (Electrical Engineering Dept.)
Docent	Tampere University of Technology, since to present in Speech Technology (Electrical Engineering)
Full professor, acoustics	Helsinki University of Technology, 1986 to present
Head of laboratory	Lab. of Acoustics and Audio Signal Processing, (now part of Dept. Signal Processing and Acoustics) 1980-2005

Periods of sabbatical leave (Academy of Finland positions):

1984-85, 1989-90, 1994-95, 1999-2000, 2004-2005

Awards and memberships in scientific organizations:

Audio Engineering Society (AES), FELLOW award 1999
Audio Engineering Society SILVER MEDAL 2006
Institute of Electrical and Electronic Engineers (IEEE), senior member since 2001
Acoustical Society of America (ASA)
International Computer Music Association (ICMA)
European Acoustics Association (EAA), through ASF
International Speech Communication Association (ISCA)
Acoustical Society of Finland (ASF, Chairman 1985-89 and 1991-94, 1997-99),
HONORARY MEMBER since 2003
Finnish Artificial Intelligence Society (board member 1992-94)
Electronic Engineering Society of Finland
Pattern Recognition Society of Finland
Biomedical Engineering Society of Finland
Society of Linguistic Science in Finland

Research profile (project leader and personal research topics)

Speech synthesis (Finnish text-to-speech synthesis), 1973-80, 1987-90, 1998-2001
Applications of speech technology to the disabled, 1974-80, 1987-89, 1996-99
Auditory modeling and its applications, 1981-86, 1992-93, 1996-
Symbolic and knowledge-based signal processing, 1986-91
Programming environments for digital signal processing, 1980-82, 1986-
Speech recognition (Finnish), 1988-89, 1990-93, 1996-99
Applications of neural networks in speech, audio, and acoustics, 1990-
Speech database development (Finnish), 1992-2005
Modeling of spatial hearing and auralization, 1991-
Modeling of musical instruments and model-based sound synthesis, 1990-
Computer-based education in acoustics and signal processing, 1993-
Sound quality (general, audio, product sound quality), 1981-87, 1996-99, 2008-
Computational modeling of the acoustics of closed spaces 1986-
Computational modeling of acoustic and vibroacoustic systems 1998-
Augmented and virtual audio reality 2001-
Various other topics in acoustics, audio, speech, signal processing, and music technology
Supervisor or director of more than 50 research projects

Teaching profile

Lectures on the following topics:

Electronics, circuit design, speech processing and speech communication techniques, analog and digital signal processing, acoustics, audio techniques, and presently: fundamentals of acoustics, audio techniques and signal processing, engineering psychoacoustics.

Student supervision:

Supervised 20 D.Sc. (Tech.) students (3 of them are professors now)

Supervised 15 Lic.Sc. (Tech.) degree students

Supervised 98 Master's degree students

Selected special merits and activities

Invited plenary talk and paper: "Auditory Modeling for Speech Processing", Int. Congr. of Phonetic Sciences, Tallinn 1985.

Chairman of the organizing committee of Nordic Acoustical Meeting, NAM-88, Tampere, Finland, 1988.

Invited tutorial paper: "DSP Software Integration by Object-Oriented Programming, A Case Study of QuickSig". IEEE ASSP Magazine, April 1990.

Visiting scholar to Stanford University, CCRMA (Center for Computer Research in Music and Acoustics), 1994-95.

ICMC-95 (Int. Conf. of Computer Music) best paper award for paper: Karjalainen M., Huopaniemi J., Välimäki V., Hernoux B., Explorations of Wind Instruments Using Digital Signal Processing and Physical Modeling Techniques. Proc. ICMC-95, Banff, Canada, 1995.

Paper chairman of the AES 16th International Conference "Spatial Sound Reproduction", Rovaniemi, Finland, April 1999.

Member of the Int. Scientific Committee of EUROSPEECH '99 (Budapest, Sept. 1999).

Member of the Program Committee of "Workshop on Multimedia Signal Processing", Copenhagen, September 1999.

Fellowship of the Audio Engineering Society (AES), September 1999.

General chairman of the WASPAA'99 (IEEE Workshop on Applications of Signal Processing to Audio and Acoustics, October 1999), Mohonk, New Paltz, New York, USA.

Invited paper "New techniques and effects in model-based sound synthesis", in DAFx'99 (Digital Audio Effects 1999) Workshop in Trondheim, Norway, December 1999,

Member of scientific committee of EUSIPCO'2000 (European Signal Processing Conference), Tampere, Finland, 2000.

Organizer of special session "DSP in Virtual Acoustics" in EUSIPCO'2000 (European Signal Processing Conference), Tampere, Finland, 2000.

Invited keynote speech: "Modeling of Psychoacoustics and Auditory Perception: How Far Can We Go", ICAD'2001 Conference, Espoo, Finland, 2001.

Member in the organizing committee of EUROSPEECH 2001 conference, Aalborg, Denmark, September 2001.

Organizer of a special workshop "What do Industry and Universities Expect from Each Other?", EUROSPEECH 2001, Aalborg, Denmark, September 2001.

Technical chairman of the AES 22nd Conference "Virtual, Synthetic, and Entertainment Audio", Espoo, June 2002.

Organizer of a structured special session "Simulation of Sound Fields and Virtual Reality in Acoustics", in Forum Acusticum, Sevilla, Spain, September 2002.

European Liaison of IEEE ICASSP'2004 Organizing Committee, Montreal, Canada 2004
Invited speaker at the Int. Symposium: 30 Years of Communication Acoustics. Ruhr-Univ. Bochum, April 2004.
Invited keynote speaker at the Baltic-Nordic Acoustical Meeting, Marinhamn, Åland, June 2004.
Visitor to Stanford University, October 2004. 3 invited presentations.
Visitor to University of Patras, March-April 2005. 2 invited presentations.
Visitor to Cambridge University, UK, June 2005, 1 invited presentation.
Member of several other scientific committees in international conferences
Member of the board of Heureka, the Finnish Science Centre, 1991-99.
Honorary member of Heureka, the Finnish Science Centre, awarded in June 2002.
Honorary member of the Acoustical Society of Finland, awarded in Nov. 2003.
Audio Engineering Society Silver Medal Award, May 2006
Vice chairman of Int. Conf. on Digital Audio Effects (DAFX'08), Espoo 2008
Organizer of numerous national conferences and seminars in acoustics, speech, and audio
Opponent to 6 international PhD dissertations and several national ones.
8 times a member in an international professor chair evaluation board

Publications

More than 360 scientific and technical publications:
see <http://www.acoustics.hut.fi/~mak/Publications.pdf>

Paper reviews and editorials

- Editorial board member: *EURASIP J. Applied Signal Processing*, 2005-2007
- Editorial board member: *Springer Handbook of Signal Proc. in Acoustics*, 2005-2008

Paper reviews or editorials to:

- *IEEE Proc. Speech and Audio Processing (SAP)*
- *Journal of the Audio Engineering Society (JAES)*
- *Journal of the Acoustical Society of America (JASA)*
- *Acta Acustica - United with Acustica*
- *Computer Music Journal (CMJ)*
- *Journal of New Music Research*
- *EURASIP Journal of Applied Signal Processing*
- Reviews of conference papers related to signal processing, audio, and speech