

List of Publications and Invited Talks 1. 11. 2007

The ten most important articles are marked by • followed by a number.

TAPIO SARAMÄKI

Books, Book Chapters, and Special Publications

- [1] T. Saramäki, "Design of digital filters requiring a small number of arithmetic operations," Dr. Tech. dissertation, Dept. of Electrical Engineering, Tampere University of Technology, 1981, 226 pages.
- [2] • **1:** T. Saramäki, "Finite impulse response filter design", Chapter 4 in *Handbook for Digital Signal Processing*, edited by S. K. Mitra and J. F. Kaiser, John Wiley and Sons, New York, 1993, pp. 155–277.
- [3] T. Saramäki, "Design of computationally efficient FIR filters using periodic subfilters as building blocks" in *The Circuits and Filters Handbook*, edited by W.-K. Chen, CRC Press, Inc., 1995, pp. 2578–2601.
- [4] T. Saramäki and H. Tenhunen, "Efficient VLSI-realizable decimators for a sigma-delta analog-to-digital converter," in *Oversampling Delta-Sigma Data Converters: Theory, Design, and Simulations*, edited by J. C. Candy and G. C. Temes, IEEE Press, Piscataway, NJ, 1991, pp. 471–474.
- [5] *Transforms and Filter Banks: Proceedings of the First International Workshop on Transforms and Filter Banks*, Tampere, Finland, February 23–25, 1998, TICSP (Tampere University Center for Signal Processing) Series # 1, co-chaired and edited by K. Egiazarian, T. Saramäki, and J. Astola, 512 pages, published in June 1998.
- [6] *Proceedings of International TICSP Workshop on Spectral Methods and Multirate Signal Processing, SMMSP 2001*, TICSP Series # 13, Pula, Croatia, June 16–18, 2001, co-chaired and edited by T. Saramäki, K. Egiazarian, and J. Astola, 258 pages.
- [7] *Proceedings of International TICSP Workshop on Spectral Methods and Multirate Signal Processing, SMMSP 2002*, TICSP Series # 17, Toulouse, France, September 7–8, 2002, co-chaired and edited by T. Saramäki, K. Egiazarian, and J. Astola, 264 pages.
- [8] • **2:** T. Saramäki and R. Bregovic', "Multirate Systems and Filter Banks", Chapter 2 in *Multirate Systems: Design and Applications*, edited by Gordana Jovanovic, Idea Group Publishing, Hersey, USA, 2002, pp. 27–85.
- [9] T. Saramäki and J. Yli-Kaakinen, *Design of Digital Filters and Filter Banks by Optimization: Applications*. TICSP Series # 15, April 2002, 113 pages. [Online.] Available: <http://www.cs.tut.fi/~ylikaaki>.
- [10] • **3:** T. Saramäki, "Design of computationally efficient FIR filters using periodic subfilters as building blocks" in *The Circuits and Filters Handbook, Second Edition*, edited by W.-K. Chen, CRC Press, Inc., 2003, pp. 2654–2677.
- [11] T. Saramäki and Y. Lian, Gest Editors for the Special Issue on Frequency Response Masking Technique and Its Applications in *Circuits, Systems, and Signal Processing*, vol. 22, no. 2, March/April 2003, 238 pages and 10 editorial pages.
- [12] *Proceedings of the 2003 International TICSP Workshop on Spectral Methods and Multirate Signal Processing, SMMSP 2003*, TICSP Series # 22, Barcelona, Spain, September 13–14, 2003, co-chaired and edited by K. Egiazarian, T. Saramäki, and J. Astola, 228 pages.
- [13] *Proceedings of the 2004 International TICSP Workshop on Spectral Methods and Multirate Signal Processing, SMMSP 2004*, TICSP Series # 25, Vienna, Austria, September 11–12, 2004, co-chaired and edited by J. Astola, K. Egiazarian, and T. Saramäki, 332 pages.
- [14] *Proceedings of the 2005 International TICSP Workshop on Spectral Methods and Multirate Signal Processing, SMMSP 2005*, TICSP Series # 30, Riga, Latvia, June 20–22, 2005, co-chaired and edited by J. Astola, K. Egiazarian, and T. Saramäki, 184 pages.
- [15] *Proceedings of the 2006 International TICSP Workshop on Spectral Methods and Multirate Signal Processing, SMMSP 2006*, TICSP Series # 34, Florence, Italy, September 2–3, 2006, co-chaired and edited by J. Astola, K. Egiazarian, and T. Saramäki, 242 pages.
- [16] *Proceedings of the 2007 International TICSP Workshop on Spectral Methods and Multirate Signal Processing, SMMSP 2006*, TICSP Series # ??, Moscow, Russia, September 1–2, 2007, co-chaired and edited by J. Astola, M. Tchobanou, K. Egiazarian, and T. Saramäki, ?? pages.
- [17] • **4:** A. Gotchev, K. Egiazarian, and T. Saramäki, "Image interpolation by optimized spline-based kernels", Chapter 7 in *Advances in Signal Transforms: Theory and Applications*, edited by Jaakko Astola and Leodid Yaroslavsky, Hidawi Publishing Corporation (Special EURASIP Book Series on Signal Processing and Communications), New York, 2007, pp. 285–335.
- [18] *Proceedings of the 5th International Symposium on Image and Signal and Analysis (ISPA 2007)*, Istanbul, Turkey, September 27–29, 2007, edited by M. Petrou, T. Saramäki, A. Ercil, and S. Loncaric', 555 pages.
- [19] T. Saramäki and X (not yet decided, probably one or two more authors), *Design and Implementation of Digital Filters: An Engineering Approach*. A book in preparation.
- [20] T. Saramäki and X (not yet decided, probably one or two more authors), *Multirate Signal Processing: An Engineering Approach*. A book in preparation.

International Journal Articles

- [21] T. Saramäki, "Design of optimum recursive digital filters with zeros on the unit circle," *IEEE Transactions on Acoustics, Speech, and Signal Processing*, vol. ASSP-31, pp. 450–458, April 1983.
- [22] T. Saramäki, "Computationally efficient narrowband linear-phase FIR filters," *IEE Proc. G, Electronic Circuits and Systems*, vol. 130, pp. 20–24, February 1983.
- [23] T. Saramäki, "Computationally efficient circularly symmetric two-dimensional FIR filters," *IEE Proc. G, Electronic Circuits and Systems*, vol. 131, pp. 46–50, April 1984.
- [24] P. Heinonen, T. Saramäki, J. Malmivuo, and Y. Neuvo, "Periodic interference rejection using coherent sampling and waveform estimation," *IEEE Transaction on Circuits and Systems*, vol. CAS-31, pp. 438–446, May 1984.
- [25] T. Saramäki, "A class of linear-phase FIR filters for decimation, interpolation, and narrow-band filtering," *IEEE Transactions on Acoustics, Speech, and Signal processing*, vol. ASSP-32, pp. 1023–1036, October 1984.
- [26] T. Saramäki and Y. Neuvo, "Digital filters with equiripple magnitude and group delay," *IEEE Transactions on Acoustics, Speech, and Signal processing*, vol. ASSP-32, pp. 1194–1200, December 1984.
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- [28] T. Saramäki, "Design of digital filters with maximally flat passband and equiripple stopband magnitude," *International Journal on Circuit Theory and Applications*, vol. 13, pp. 269–286, July 1985.
- [29] T. Saramäki, "On the design of digital filters as a sum of two all-pass filters," *IEEE Transactions on Circuits and Systems*, vol. CAS-32, pp. 1191–1193, Nov. 1985.

- [30] • **5(a)**: M. Renfors and T. Saramäki, "Recursive N th-band digital —Part I: Design and properties," *IEEE Transactions on Circuits and Systems*, vol. CAS-34, pp. 24–39, January 1987.
- [31] • **5(b)**: M. Renfors and T. Saramäki, "Recursive N th-band digital filters —Part II: Design of multistage decimators and interpolators," *IEEE Transactions on Circuits and Systems*, vol. CAS-34, pp. 40–51, January 1987. (This paper together with the above paper received the 1987 IEEE Circuits and Systems Society's Guillemin-Cauer Award.)
- [32] T. Saramäki, T.-H. Yu, and S. K. Mitra, "Very low sensitivity realization of IIR digital filters using a cascade of complex all-pass structures", *IEEE Transactions on Circuits and Systems*, vol. CAS-34, pp. 876–886, August. 1987.
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- [44] J. Yli-Kaakinen and T. Saramäki, "Design of very low-sensitivity and low-noise recursive digital filters using a cascade of low-order wave lattice filters," (an invited paper among only 19 articles to the special issue on ISCAS'98) *IEEE Transactions on Circuits and Systems — II: Analog and Digital Signal Processing*, vol. 46, pp. 906–914, July 1999.
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International Conference Articles

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- [321] T. Saramäki, Description of the following program packages developed by the author: GROAN (p. 25), CLASSIC (p. 27), IIR (p. 28), IFIR (p. 29), NY (p. 30), SUBBI (p. 31), MULTI (p. 32), in *Scandinavian digital signal processing inventory*, edited by J. Skyttä, Laboratory of Information and Computer Science, Department of Technical Physics, Helsinki University of Technology, Report TKK-F-B91.

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- [322] T. Saramäki, P. Jarske, and M. Renfors, "Exercises in digital filtering," 1991 (in Finnish)
- [323] T. Saramäki, "Basic Digital Signal Processing," 1996 (in English)
- [324] T. Saramäki, "Advanced Digital Filtering," 1996 (in English)
- [325] T. Saramäki, "System Level DSP Algorithms," 1997 (in English)
- [326] T. Saramäki, "Discrete-Time Wavelets," 1997 (in English)
- [327] T. Saramäki, "Digital Linear Filtering I," 1999 (in English)
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Invited Presentations and

Participation in Education Programs

- T. Saramäki, "Computationally efficient narrowband linear-phase FIR filters," University of California, Santa Barbara, April 1982.
- T. Saramäki, "Efficient algorithms for designing IIR filters with arbitrary specifications, optimum magnitude in the Chebyshev sense, and different numerator and denominator orders," University of California, Santa Barbara, June 1982.
- T. Saramäki, "Design of computationally efficient decimation and interpolation filters - A tutorial review," University of California, Santa Barbara, July 1986.
- T. Saramäki, "Digital signal processing in Europe," Beijing University of Post and Telecommunication, China, November 1987
- T. Saramäki, "A new class of window functions for designing FIR filters," University of California, Santa Barbara, June 1990.
- T. Saramäki, "Multiplier-free decimators for superresolution sigma-delta A/D converters," University of California, Santa Barbara, June 1990.
- T. Saramäki, "VLSI-realizable decimators", NORSIG seminar in signal processing, Bergen, Norway, November 1991.
- "FIR filters — Why I am still engaged", NORSIG seminar in signal processing, Bergen, Norway, November 1991.
- T. Saramäki, "FIR filters — Why I am still engaged", University of Victoria, Victoria, Canada, May 1992.
- T. Saramäki, "Optimization of digital filter structures for VLSI implementation," Beijing University of Post and Telecommunication, China, November 1993.
- T. Saramäki and A. Fam, "Subfilter approach for designing efficient FIR filters," (invited tutorial paper) at *1988 IEEE International Symposium on Circuits and Systems.*, (Espoo, Finland), pp. 2903–2915, June 1988.
- T. Saramäki, T. Karema, T. Ritoniemi, J. Isoaho, H. Tenhunen, "VLSI-realizable multiplier-free interpolators for Sigma-Delta D/A-converters" (invited paper), at *International Conference on Circuits and Systems* (Nanjing, China), pp. 60–63, July 1989.
- T. Saramäki, "Adjustable windows for the design of FIR filters – A tutorial" (invited tutorial paper) at *Sixth Mediterranean Electrotechnical Conference* (Ljubljana, Yugoslavia), pp. 28–33, May 1991.
- T. Saramäki and T. Ritoniemi, "Optimization of digital filter structures for VLSI implementation," presented at *the 38th International Annual Gathering, KoREMA*, Zagreb, Croatia, April 1993
- T. Saramäki, "Basic Digital Signal Processing," in Biomedical Signal Processing, Pre-Conference Tutorial Courses, *First International Conference on Bioelectromagnetism* (Tampere, Finland), June 1996.
- T. Saramäki, "Efficient DSP Algorithms and Their Optimization for VLSI and Signal Processor Implementations", a plenary talk at *1997 International Conference on Computer Science and Information Technologies* (Yerevan, Armenia), Sept. 1997.
- T. Saramäki, "Efficient DSP Algorithms and Their Optimization for VLSI and Signal Processor Implementations", Department of Telecommunications, Norwegian University of Science and Technology, May 1998.
- T. Saramäki and M. Renfors, "Nth band filter design," at *IX European Signal Processing Conference* (Island of Rhodes, Greece), September 1998.
- T. Saramäki and J. Vesma, "Polynomial-based interpolation for digital signal processing applications," a plenary talk at *1999 International Conference on Computer Science and Information Technologies* (Yerevan, Armenia), August 1999.
- T. Saramäki, "Apuneuvona luova hulluus" ("Creative madness as a basic tool") in an education program for youngsters searching for a proper profession in the future. Altogether four Finnish scientists were involved in this program. This program was delivered as a CD-ROM to most Finnish schools and is entitled "Ammattina tutkija — Ammateista haastavin" ("A researcher as a profession - the most challenging profession," the Academy of Finland, 2000.

- T. Saramäki, "Efficient DSP algorithms and their optimization for practical applications as well as for VLSI and signal processor implementations", an invited lecture given at the first IEEE South-American Workshop on Circuits and Systems (SAWCAS'2000), Rio de Janeiro, Brazil, November 20-22, 2000, Bahia Blanka, Argentina, November 22-24, 2000: T. Saramäki and J. Yli-Kaakinen, "Design of digital filters and filter banks by optimization: Applications", 32 two-column pages, included in the CD-ROM.
- T. Saramäki, "Efficient DSP Algorithms and Their Optimization for VLSI and Signal Processor Implementations," the National University of Singapore, October 2001.
- T. Saramäki, "Optimization of Digital Filters and Filter Banks: Practical Applications," the National University of Singapore, October 2001.
- T. Saramäki, "Polynomial-Based Interpolation for Digital Signal Processing Applications – A Tutorial Review," the National University of Singapore, October 2001.
- T. Saramäki, "Polynomial-Based Interpolation for Digital Signal Processing Applications – A Tutorial Review," an invited lecture given at the second IEEE South-American Workshop on Circuits and Systems (SAWCAS'2001), Rio de Janeiro, Brazil, November 25-27, 2001, Buenos Aires, Argentina, November 27-29, 2001
- T. Saramäki, "Efficient DSP Algorithms and Their Optimization for VLSI and Signal Processor Implementations," Technical University of Sofia, Bulgaria, June 17, 2002 (IEEE Distinguished Lecturer Program).
- T. Saramäki, "Efficient DSP Algorithms and Their Optimization for VLSI and Signal Processor Implementations," a plenary talk at the International Conference on Computer Systems and Technologies (e-Learning) (CompSysTech 2002), June 20-21, Sofia, Bulgaria (IEEE Distinguished Lecturer Program).
- T. Saramäki, "Digital Signal Processing from Theory to Practice" and "Recent Advances in Ant Rereach," a banquet talk, at the 5th Nordic Signal Processing Symposium (on board Hurtigruten, Norway), October 2002.
- T. Saramäki, "Efficient DSP Algorithms and Their Optimization for VLSI and Signal Processor Implementations," University of Nis, Serbia, November 25, 2002 (IEEE Distinguished Lecturer Program).
- T. Saramäki, "Polynomial-Based Interpolation for Signal Processing and Telecommunication Applications," a plenary talk at the X Telecommunications Forum (TELFOR 2002), November 26-28, Belgrade, Serbia (IEEE Distinguished Lecturer Program).
- T. Saramäki, "Design of Digital Filters and Filter Banks by Optimizations: Applications," at the X Telecommunications Forum (TELFOR 2002), November 26-28, Belgrade, Serbia (IEEE Distinguished Lecturer Program).
- T. Saramäki, A TV interview for an education program on scientific research in Serbia during the above-mentioned conference. Some parts of this interview were broadcasted as a TV program in Serbia.
- T. Saramäki, "Efficient DSP Algorithms and Their Optimization for VLSI and Signal Processor Implementations", a plenary talk at the 5th International Conference and Exhibition on Digital Signal Processing and Its Applications, March 12–14, 2003, Moscow, Russia.
- T. Saramäki, "Efficient DSP Algorithms and Their Optimization for VLSI and Signal Processor Implementations," University of Victoria, Canada, May 2004.
- T. Saramäki, "Optimization of Digital Filters and Filter Banks: Practical Applications," University of Victoria, Canada, May 2004.
- T. Saramäki, A tutorial talk entitled "Polynomial-Based Interpolation" at the 6th Nordic Signal Processing Symposium (NORSIG 2004), June 9-11, 2004, Espoo, Finland.
- T. Saramäki, "Design of Digital Filters and Filter Banks by Optimization: Applications, a plenary talk at the 7th International Conference and Exhibition on Digital Signal Processing and Its Applications, March 16–18, 2005, Moscow, Russia.
- T. Saramäki, "Efficient Techniques for Image Re-Sampling," Nanyang Technological University, Singapore, July 18, 2005.
- T. Saramäki, "Efficient Techniques for Image Re-Sampling," INAOE, Puebla, Mexico, March 3, 2006.
- T. Saramäki, "Efficient DSP Algorithms and Their Optimization for VLSI and Signal Processor Implementations," University of Zagreb, Croatia, September 19, 2005.
- T. Saramäki, "Optimization of Digital Filters and Filter Banks: Applications," University of Zagreb, Croatia, September 19, 2005.
- T. Saramäki, "Efficient Techniques for Image Re-Sampling," a plenary talk at EUROCON 2005 - The International Conference on "Computer as a Tool" November 21-24, 2005, Belgrade, Serbia and Montenegro.
- T. Saramäki, "Efficient DSP Algorithms and Their Optimization for VLSI and Signal Processor Implementations," INAOE, Puebla, Mexico, February 28, 2006.
- T. Saramäki, "Optimization of Digital Filters and Filter Banks: Applications," INAOE, Puebla, Mexico, February 28, 2006.
- T. Saramäki, "Efficient Techniques for Image Re-Sampling," INAOE, Puebla, Mexico, March 3, 2006.
- T. Saramäki, "Efficient Techniques for Image Re-Sampling," a plenary talk at the 8th International Conference and Exhibition on Digital Signal Processing and Its Applications, March 29–31, 2006, Moscow, Russia.
- A. Gotchev and T. Saramäki, A tutorial talk entitled "Efficient Techniques for Image Re-Sampling," at the 7th Nordic Signal Processing Symposium (NORSIG 2006), June 7-9, 2006, Reykjavik, Iceland.
- T. Saramäki, "Efficient Techniques for Image Re-Sampling," Nanyang Technological University, Singapore, December 8, 2006.
- T. Saramäki, "Efficient DSP Algorithms and Their Optimization for VLSI and Signal Processor Implementations," Norwegian University of Science and Technology, July 2, 2007.
- T. Saramäki, "Efficient Techniques for Image Re-Sampling," Norwegian University of Science and Technology, July 2, 2007.