

## CURRICULUM VITAE

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### Education:

- 1990 Student matriculation, Helsingin Suomalainen Yhteiskoulu
- 1996 Diploma Engineer (M.Sc.), Helsinki University of Technology, Department of Electrical Engineering
- 2000 Doctor of Science in Technology, Helsinki University of Technology, Department of Computer Science and Engineering

### Language Skills:

Finnish, English, German, Swedish

### Military Service:

1991-1992 Finnish Army, rank: second lieutenant

### Employment:

- 1994-1995 Research Assistant, Helsinki University of Technology, Laboratory of Computer and Information Science
- 1995-1996 Research Assistant, Helsinki University of Technology, Neural Networks Research Centre
- 1996-2002 Research Scientist, Helsinki University of Technology, Neural Networks Research Centre
- 2002-2003 Visiting Researcher, International Computer Science Institute, Berkeley, California, USA, 12 months
- 2003-2005 Research Scientist, Helsinki University of Technology, Neural Networks Research Centre
- 2005-2009 Bioinformatician, University of Helsinki: Department of Applied Biology, Department of Food and Environmental Hygiene, and DNA Sequencing and Genomics Lab at Institute of Biotechnology
- 2010-2011 Postdoctoral Researcher, University of Helsinki, Metapopulation Research Group

### Teaching:

Teaching assistant in digital signal processing, pattern recognition, and neural computation courses at Helsinki University of Technology, 1994-1997. Microarray data analysis using R Bioconductor, 5 courses at CSC, Espoo, Finland, during 2006-2009.

### Ten best publications:

P. Somervuo, A. Härmä, and S. Fagerlund, Parametric representations of bird sounds for automatic species recognition, *IEEE Transactions on Audio, Speech, and Language Processing*, 14(6), 2006, pp. 2252-2263.

P. Somervuo, Online Algorithm for the Self-Organizing Map of Symbol Strings, *Neural Networks*, 17, 2004, pp. 1231-1239.

P. Somervuo, Speech Dimensionality Analysis on Hypercubical Self-Organizing Maps, *Neural Processing Letters* 17(2), 2003, pp. 125-136.

T. Kohonen and P. Somervuo, How to make large self-organizing maps for nonvectorial data, *Neural Networks* 15(8-9), 2002, pp. 945-952.

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P. Somervuo, Speech Recognition Using Temporally Connected Kernels in Mixture Density Hidden Markov Models, in *Proc. ICASSP*, 2000. Vol. 6, pp. 3434-3437.

P. Somervuo, Time Topology for the Self-Organizing Map, in *Proc. IJCNN*, 1999. Vol. 3, pp. 1900-1905.

### **All publications:**

Lehtonen MT, Akita M, Kalkkinen N, Ahola-Iivarinen E, Rönholm G, Somervuo P, Thelander M, Valkonen JP. Quickly-released peroxidase of moss in defense against fungal invaders. *New Phytol.* 2009;183(2):432-43.

Benachenhou F, Jern P, Oja M, Sperber G, Blikstad V, Somervuo P, Kaski S, Blomberg J. Evolutionary conservation of orthoretroviral long terminal repeats (LTRs) and ab initio detection of single LTRs in genomic data. *PLoS One.* 2009;4(4):e5179

Lindström M, Hinderink K, Somervuo P, Kiviniemi K, Nevas M, Chen Y, Auvinen P, Carter AT, Mason DR, Peck MW, Korkeala H. Comparative genomic hybridization analysis of two predominant Nordic group I (proteolytic) *Clostridium botulinum* type B clusters. *Appl Environ Microbiol.* 2009 May;75(9):2643-51

Aittamaa M, Somervuo P, Pirhonen M, Mattinen L, Nissinen R, Auvinen P, Valkonen JP. Distinguishing bacterial pathogens of potato using a genome-wide microarray approach. *Mol Plant Pathol.* 2008 Sep;9(5):705-17.

Lehtonen MJ, Somervuo P, Valkonen JP. Infection with *Rhizoctonia solani* induces defense genes and systemic resistance in potato sprouts grown without light. *Phytopathology.* 2008 Nov;98(11):1190-8.

Mattinen L, Somervuo P, Nykyri J, Nissinen R, Kouvonon P, Corthals G, Auvinen P, Aittamaa M, Valkonen JP, Pirhonen M. Microarray profiling of host-extract-induced genes and characterization of the type VI secretion cluster in the potato pathogen *Pectobacterium atrosepticum*. *Microbiology.* 2008 Aug;154(Pt 8):2387-96.

Greco D, Somervuo P, Di Lieto A, Raitila T, Nitsch L, Castrén E, Auvinen P. Physiology, pathology and relatedness of human tissues from gene expression meta-analysis. *PLoS One.* 2008 Apr 2;3(4):e1880

Dahlsten E, Korkeala H, Somervuo P, Lindström M. PCR assay for differentiating between Group I (proteolytic) and Group II (nonproteolytic) strains of *Clostridium botulinum*. *Int J Food Microbiol.* 2008 May 10;124(1):108-11

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P. Somervuo, Comparison of ML, MAP, and VB based acoustic models in large vocabulary speech recognition, in *Proceedings of the 8th International Conference on Spoken Language Processing (ICSLP)*, Jeju Island, Korea, October 5-8, 2004. Vol. I, pp. 701-704.

P. Somervuo and A. Härmä, Bird song recognition based on syllable pair histograms, in *Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Montreal,

Canada, May 17-21, 2004. Vol. V, pp. 825-828.

A. Härmä and P. Somervuo, Classification of the harmonic structure in bird vocalization, in Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Montreal, Canada, May 17-21, 2004. Vol. V, pp. 701-704.

P. Somervuo, Self-Organizing Map of Symbol Strings with Smooth Symbol Averaging, in Proceedings of the Workshop on Self-Organizing Maps (WSOM), Hibikino, Kitakyushu, Japan, September 11-14, 2003. CD-ROM.

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M. Oja, P. Somervuo, S. Kaski, and T. Kohonen, Clustering of human endogenous retrovirus sequences with median self-organizing map, in Proceedings of the Workshop on Self-Organizing Maps (WSOM), Hibikino, Kitakyushu, Japan, September 11-14, 2003. CD-ROM.

P. Somervuo, B. Chen, and Q. Zhu, Feature Transformations and Combinations for Improving ASR Performance, in Proceedings of the 8th European Conference on Speech Communication and Technology (Eurospeech), Geneva, Switzerland, September 1-4, 2003. Vol. I, pp. 477-480.

P. Somervuo, Experiments with Linear and Nonlinear Feature Transformations in HMM Based Phone Recognition, in Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Hong Kong, 2003. Vol. I, pp. 52-55.

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P. Somervuo, Two-level phoneme recognition based on successive use of monophone and diphone models, in Proceedings of the XI European Signal Processing Conference (EUSIPCO), Toulouse, France, September 3-6, 2002, vol. III, pp. 77-80.

P. Somervuo, Self-Organizing Maps for Signal and Symbol Sequences, PhD Thesis, Helsinki University of Technology, 2000. Published in Acta Polytechnica Scandinavica, Mathematics and Computing Series No. 107, ISBN 951-666-550-0.

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P. Somervuo, Competing Hidden Markov Models on the Self-Organizing Map, in Proceedings of the International Joint Conference on Neural Networks (IJCNN), Como, Italy, 2000. Vol. 3, pp. 169-174.

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M. Karjalainen, P. Boda, P. Somervuo, and T. Altsaar, Applications for the Hearing-Impaired: Evaluation of Finnish Phoneme Recognition Methods, in *Proceedings of the 5th European Conference on Speech Communication and Technology (Eurospeech)*, Rhodes, Greece, 1997. Vol. 4, pp. 1811-1814.

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