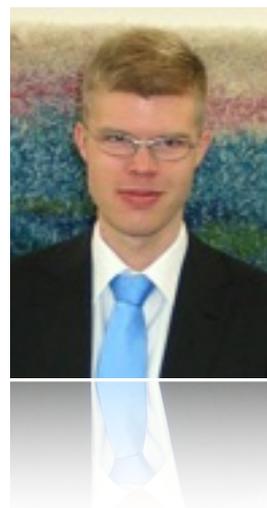


Curriculum Vitae - Jarkko Ylipaavalniemi

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Date of Birth: 13.5.1978 - Helsinki, Finland
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Summary

From an assembly coder in the Amiga demo scene into a hard core machine learning researcher, with a keen interest in image analysis and computer generated graphics. Author of several highly cited articles in leading neuroinformatics and machine learning journals. Always interested in the coolest advances in machine learning and 3D graphics, currently deep learning and wavelet triple-product integrals. I have also studied neuroinformatics, bioinformatics, software development, business, and management. Pursuing personal dreams by founding startups for mobile and cloud development, and setting up an open source foundation for programming language development.

Education

- **Doctor of Science (Technology):** Aalto University, Finland (2013)
Department: Information and Computer Science
Major: Computer and Information Science
Minor: Cognitive Science
- **Master of Science (Technology):** Helsinki University of Technology, Finland (2005)
Department: Computer Science and Engineering
Major: Computer and Information Science
Minor: Industrial Management
- **Military service:** ViestiR - Riihimäki, Finland (1998)
Rank: Lance Corporal
- **Matriculation examination:** Espoonlahden Lukio, Finland (1997)
- **Language skills:** Finnish native, English fluent, Swedish adequate

Work Experience

- **Department of Information and Computer Science - Aalto University**
Post-doctoral Researcher 4.5.2013 - 31.12.2013
Researcher 1.1.2010 - 3.5.2013
Teaching Assistant on Image Analysis in Neuroinformatics 2008 - 2012
Teaching Assistant on Signal Processing in Neuroinformatics 2007 - 2011
Analysis of functional brain imaging data with adaptive unsupervised methods. Pursuing a doctoral degree.
- **Adaptive Informatics Research Centre - Helsinki University of Technology**
Researcher 22.3.2005 - 31.12.2009
Research Assistant 1.6.2003 - 21.3.2005
Analysis of functional brain imaging data with adaptive unsupervised methods. Pursuing a doctoral degree.
- **Arcus Software Oy**
Software Engineer 8.2.2000 - 31.7.2002
Development of tools and algorithms for 3-dimensional urban and terrain modeling and visualization.

Grants And Memberships

- **Helsinki Graduate School in Computer Science and Engineering (HeCSE)**
Funded Position 1.1.2009 - 31.12.2009
Adjunct Position 1.1.2008 - 31.12.2008
- **Jenny ja Antti Wihurin rahasto**
Personal Stipend 7.10.2008
- **Tekniikan Edistämmissäätiö (TES)**
Personal Stipend 31.5.2009
Personal Stipend 31.5.2007

Referee Duties

- Journal of Machine Learning Research
- NeuroImage
- International Conference on Latent Variable Analysis and Signal Separation (LVA/ICA)

Professional Skills

- **Scientific knowledge:** Information theory, neural networks, signal processing, image processing, computer vision, computer graphics, software architecture, functional brain imaging, neuroinformatics, neuroscience, international project management and marketing, etc.
- **Programming languages:** Imperatives, functionals, objectives, scripts, assemblers, and many other paradigms.
- **Software development:** Scientific computing, back-end, front-end, mobile, desktop, cloud, graphics, 3D, etc.
- **Other:** Operating systems, visualization, publishing, startups, etc.

Professional Interests

- Research and development in machine learning methods to solve challenging real world problems dealing with big data, crowdsourced data, and multiple sources of different types of data. Using advanced machine learning approaches, such as, deep learning and kernel methods, with applications in data analytics, image analysis and computer vision.
- I have always been interested in 3D modeling and visualization. My experience ranges from self coded computer graphics demos, for participating in various competitions, to high-end CAD systems. Building on this experience I'm still eager to learn even more.
- Based on decades of experience with many programming languages and environments, I have very strong skills in both low- and high-level abstraction, particularly in object-oriented designs, and in making clean and robust implementations. I'm also passionate about software design and programming tools.

Hobbies

- Running, gym, and swimming
- Alpine skiing in various flavors
- Spacecrafts, astronomy, and cosmology
- Computer coding, graphics, and games

Publications

- J. Karhunen, T. Hao and J. Ylipaavalniemi. **Finding Dependent and Independent Components from Related Data Sets: A Generalized Canonical Correlation Analysis Based Method**. In *Neurocomputing*, issue 113(1), pages 153-167, August 2013.
- J. Ylipaavalniemi. **Data-driven Analysis for Natural Studies in Functional Brain Imaging**. Doctoral Thesis, Espoo, Finland, May 2013.
- N. Reyhani, J. Ylipaavalniemi, R. Vigário and E. Oja. **Consistency and asymptotic normality of FastICA and Bootstrap FastICA**. In *Signal Processing*, issue 92(8), pages 1767-1778, August 2012.
- J. Karhunen, T. Hao and J. Ylipaavalniemi. **A Generalized Canonical Correlation Analysis Based Method for Blind Source Separation from Related Data Sets**. In *Proceedings of the 2012 IEEE International Joint Conference on Neural Networks (IJCNN 2012)*, pages 1-9, Brisbane, Australia, June 2012.
- J. Ylipaavalniemi, N. Reyhani and R. Vigário. **Distributional Convergence of Subspace Estimates in FastICA: A Bootstrap Study**. In *Proceedings of the 10th International Conference on Latent Variable Analysis and Signal Separation (LVA/ICA 2012)*, pages 123-130, Tel Aviv, Israel, March 2012.
- J. Karhunen, T. Hao and J. Ylipaavalniemi. **A Canonical Correlation Analysis Based Method for Improving BSS of Two Related Data Sets**. In *Proceedings of the 10th International Conference on Latent Variable Analysis and Signal Separation (LVA/ICA 2012)*, pages 91-98, Tel Aviv, Israel, March 2012.
- J. Ylipaavalniemi, E. Savia, S. Malinen, R. Hari, R. Vigário and S. Kaski. **Dependencies between stimuli and spatially independent fMRI sources: Towards brain correlates of natural stimuli**. In *NeuroImage*, issue 48(1), pages 176-185, October 2009.

- J. Ylipaavalniemi and J. Soppela. **Arabic: Robust ICA in a Pipeline**. In Proceedings of the 8th International Conference on Independent Component Analysis and Signal Separation (ICA 2009), pages 379-386, Paraty, Brazil, March 2009.
- J. Ylipaavalniemi and R. Vigário. **Matching complex activation patterns with features of natural stimuli**. In Conference Abstracts of the 1st INCF Congress of Neuroinformatics: Databasing and Modeling the Brain (Neuroinformatics 2008), page 71, Stockholm, Sweden, September 2008.
- J. Ylipaavalniemi and R. Vigário. **Analyzing Consistency of Independent Components: An fMRI Illustration**. In NeuroImage, issue 39(1), pages 169-180, January 2008.
- J. Ylipaavalniemi and R. Vigário. **Subspaces of Spatially Varying Independent Components in fMRI**. In Proceedings of the 7th International Conference on Independent Component Analysis and Signal Separation (ICA 2007), pages 665-672, London, UK, September 2007.
- J. Ylipaavalniemi, E. Savia, R. Vigário and S. Kaski. **Functional Elements and Networks in fMRI**. In Proceedings of the 15th European Symposium on Artificial Neural Networks (ESANN 2007), pages 561-566, Bruges, Belgium, April 2007.
- J. Ylipaavalniemi, S. Mattila, A. Tarkiainen and R. Vigário. **Brains and Phantoms: An ICA Study of fMRI**. In Proceedings of the 6th International Conference on Independent Component Analysis and Blind Signal Separation (ICA 2006), pages 503-510, Charleston, SC, March 2006.
- J. Ylipaavalniemi. **Variability of Independent Components in functional Magnetic Resonance Imaging**. Master's Thesis, Espoo, Finland, March 2005.
- J. Ylipaavalniemi and R. Vigário. **Analysis of Auditory fMRI Recordings via ICA: A Study on Consistency**. In Proceedings of the 2004 IEEE International Joint Conference on Neural Networks (IJCNN 2004), pages 249-254, Budapest, Hungary, July 2004.