# Urs Köster

PhD Student


Contact

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Nationality German
Date of birth 19th March 1983

## Peer-Reviewed Publications

December 2008
Urs Köster, Jussi Lindgren, Michael Gutmann and Aapo Hyvärinen
Learning Natural Image Structure with a Horizontal Product Model
**Springer LNCS, Proc. Independent Component Analysis 2009**

December 2008
Urs Köster, Jussi T. Lindgren and Aapo Hyvärinen
Estimating Markov Random Field Potentials for Natural Images
**Springer LNCS, Proc. Independent Component Analysis 2009**

June 2008 (submitted)
Urs Köster and Aapo Hyvärinen
A Two-Layer Model of Natural Stimuli Estimated with Score Matching
**Neural Computation (Pending Review)**

September 2007
Urs Köster and A. Hyvärinen
A two-layer ICA-like model estimated by Score Matching.
**Proc. Int. Conf. on Artificial Neural Networks (ICANN2007)**

April 2007 (submitted)
Aapo Hyvärinen and Urs Köster
Complex Cell Pooling and the Statistics of Natural Images
**Network: Computation in Neural Systems, 2007**

June 2006
Aapo Hyvärinen and Urs Köster
FastISA: A fast fixed-point algorithm for Independent Subspace Analysis
**ESANN2006: Proc. of the 14th European Symposium on Artificial Neural Networks**

## Activities & Achievements

August 2004 - August 2009

**Alfried Krupp von Bohlen und Halbach-Stiftung**
Scholarship
Funding for five years for pursuing a Ph.D. in computational Neuroscience

August 2007 - August 2009

**Helsinki Graduate School in Computer Science & Engineering**
Funded position
Funding for two years for pursuing a Ph.D. in computational Neuroscience

November 2008

**Frankfurt Institute for Advanced Studies**
Invited speaker
Workshop "Machine Learning Approaches to Representational Learning and Recognition in Vision"

August 2008

**Canadian Institute for Advanced Research**
Summer School “Neural computation and adaptive perception”
One week intensive course

June 2008 - July 2008

**Cold Spring Harbour Laboratory**
Summer Course “Computational Neuroscience: Vision”
Two-week course of lectures and student projects

February 2008

**COSYNE Meeting**
Poster presentation: Learning optimal MRF potentials with ICA

September 2007

**ICANN Conference**
Poster presentation: A two-layer ICA-like model estimated by Score Matching.

February 2007

**COSYNE Meeting**
Poster presentation: Estimation of two-layer statistical model of natural images using score matching leads to complex cell properties

November 2006

**Redwood Center, Berkeley University**
Invited speaker, Redwood Seminar
Presentation about multilayer models for natural images

June 2006

**Okinawa Institute for Science and Technology**
Okinawa Computational Neuroscience Course
Two week course with distinguished lectureres. Award-winning student project

April 2006

**ESANN Conference**
Poster Presentation: FastISA: A fast fixed-point algorithm for Independent Subspace Analysis

September 2005

**Nordic Workshop on Computational Neuroscience**
Invited speaker
Presentation about advances in Independent Subspace Analysis

July 2005

**Canadian Institute for Advanced Research**
Summer School “Neural computation and adaptive perception”
One week course with lectures, student projects and presentations

July 2005

**CNS Conference**
Poster presentation: Modelling Complex Cells with Generalized Independent Subspace Analysis of Natural Images

## Education

August 2004 - August 2009

**Helsinki University, Finland**
PhD Programme in computational neuroscience
Supervisor Prof. Aapo Hyvärinen. My interests are in the understanding and modelling of low level vision, especially primary visual cortex.

October 2003 - March 2004

**St. Andrews University, Scotland**
Research project
Developing a generative statistical model of natural images using neural network techniques. Supervised by Dr. Peter Földiák at the School of Psychology.

September 1999 - June 2003

**St. Andrews University, Scotland**
Master of Physics with Honours of the First Class

September 1998 - June 1999

**Cademuir International School, Scotland**
Scottish Higher Levels, graduated top of the class

## Skills and Knowledge

**Work experience**

June - September 2002 and July - September 2003

**Triaton GmbH, Essen and Dortmund, Germany**
Programming, Administration
The two Summers I was working for Triaton, an IT subsidiary of ThyssenKrupp, I spend a total of 5 months working in different areas of email server administration, which was done mainly in Linux. Work there included programming (C, Java and Perl) and maintenance as an assistant administrator. Two main projects I was responsible for:
Developing an SQL database and PHP scripts to monitor and control servers from a web front-end.
Researching into the best options to control unsolicited email and setting up a server for company wide unsolicited email control.

**Teaching**

**Course Assistant** for “Unsupervised Machine Learning” and “Modelling of Vision”
**Supervision** of a summer student

**Languages**

| | |
|---|---|
| English | Fluent |
| German | Native |
| Spanish | Basics |

**IT Knowledge**

**Programming**: Some experience in C and Java, web-based programming in PHP, scripting in Perl
**Scientific applications:** Experience in Mathematica and MatLab
**Misc**.: Experience with office software, Photoshop, Web Development