

Jakob Nordström

Curriculum Vitae

Computer Science and Artificial Intelligence Laboratory
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Research Interests

Computational complexity, logic

Education

- 2008 PhD in Computer Science at the Royal Institute of Technology (KTH), Stockholm, Sweden, under the supervision of Professor Johan Håstad
- 2001 MSc in Computer Science and Mathematics at Stockholm University, Sweden
- 1999-2003 Russian studies up to finished C-level (equivalent of one and a half year's full-time studies) at Uppsala University and Stockholm University, Sweden
- Summer 1993 Karolinska Institute Biomedical Research School, Stockholm, Sweden
- 1993 Higher Certificate from the Natural Sciences Programme with extended music education at Stockholm Music Upper Secondary School, Sweden
- 1992 Diploma in Choir Conducting with extended Music Theory from Tallinn Music Upper Secondary School, Estonia

Positions Held

- 2008-present Postdoc at the Massachusetts Institute of Technology hosted by Professor Madhu Sudan
- 2002-2008 Research assistant position sponsored by the President of KTH (one of 5-7 "Excellence PhD positions" awarded yearly based on undergraduate record)
- 2000/2001 Master's thesis project at Prover Technology (www.prover.com)
- 1996-1999 Teaching assistant at the Department of Mathematics, Stockholm University

Teaching

Teaching assistant on the following courses at Stockholm University:

- Algebra and Geometry part 1, first-level course 1998/99
- Introductory Course in Mathematics 1996/97
- Mathematical Analysis parts 1 and 2, first-level courses 1996/97
- Using Computers in Mathematics, second-level course 1998/99

Teaching assistant on the following courses at KTH:

- Advanced Algorithms, second-level course 2005/06
- Algorithms, Data Structures and Complexity, first-level course 2002/03, 2003/04, 2004/05, 2005/06
- Complexity Theory, second-level course 2003/04
- Fundamentals of Computer Science, first-level course 2002/03, 2003/04, 2004/05

Professional Service

Conference referee assignments:

- ACM Symposium on Theory of Computing
- IEEE Conference on Computational Complexity
- International Colloquium on Automata, Languages and Programming
- International Symposium on Fundamentals of Computation Theory

Journal referee assignments:

- SIAM Journal on Computing

Commission of Trust

2004-2007 President of the Graduate Students' Council and PhD student representative in the Board and the Executive Group at the School of Computer Science and Communication, KTH

Awards

- 2009 Ackermann Award for outstanding dissertation in Logic in Computer Science from the European Association for Computer Science Logic
- 2006 Danny Lewin Best Student Paper Award at the 38th ACM Symposium on Theory of Computing (STOC '06)
- 2006 The 2006 Meritorious Achievement Award at the School of Computer Science and Communication, KTH
- 1992 4th place in the Swedish Upper Secondary School Mathematics Competition

Presentations and Research Visits

- Oct 2008 49th IEEE Symposium on Foundations of Computer Science (FOCS '08), Philadelphia, USA
- Sep 2008 Computational Complexity of Discrete Problems, Dagstuhl, Germany
- May 2008 40th ACM Symposium on Theory of Computing (STOC '08), Victoria, Canada
- May 2008 Physics of distributed information systems (PhysDIS) workshop, Stockholm, Sweden
- Mar 2008 Technion – Israel Institute of Technology, Haifa, Israel
- Sep 2007 Fall School of Logic and Complexity, Třešť, Czech Republic
- May 2006 38th ACM Symposium on Theory of Computing (STOC '06), Seattle, USA
- Apr 2006 New Directions in Proof Complexity, Isaac Newton Institute, Cambridge, UK
- Mar 2006 Complexity of Boolean Functions, Dagstuhl, Germany

Conference Publications

In theoretical computer science, the most important venues of publications are conferences and not journals. The ACM Symposium on Theory of Computing (STOC) and the IEEE Symposium on Foundations of Computer Science (FOCS) are widely recognized as the two premier conferences worldwide in the field.

- Eli Ben-Sasson and Jakob Nordström. **Short Proofs May Be Spacious: An Optimal Separation of Space and Length in Resolution.** In *Proceedings of the 49th Annual IEEE Symposium on Foundations of Computer Science (FOCS '08)*, pages 709–718, October 2008.
- Jakob Nordström and Johan Håstad. **Towards an Optimal Separation of Space and Length in Resolution.** In *Proceedings of the 40th Annual ACM Symposium on Theory of Computing (STOC '08)*, pages 701–710, May 2008.

- Jakob Nordström. **Narrow Proofs May Be Spacious: Separating Space and Width in Resolution.** In *Proceedings of the 38th Annual ACM Symposium on Theory of Computing (STOC '06)*, pages 507–516, May 2006.

Journal Publications

A “special issue” of a journal contains the top papers from a specific conference, selected and invited by the program committee.

- Jakob Nordström. **A Simplified Way of Proving Trade-off Results for Resolution.** To appear in *Information Processing Letters*. Preprint in Technical Report TR07-114, *Electronic Colloquium on Computational Complexity (ECCC)*, <http://eccc.hpi-web.de/eccc-reports/2007/TR07-114>.
- Jakob Nordström. **Narrow Proofs May Be Spacious: Separating Space and Width in Resolution.** *SIAM Journal on Computing*, volume 39, issue 1, pages 59-121, 2009. (Special issue on STOC '06.)

Submitted Manuscripts and Manuscripts in Preparation

- Jakob Nordström. **New Wine into Old Wineskins: A Survey of Some Pebbling Classics with Supplemental Results.** Manuscript in preparation. Tentatively to be published in the journal *Foundations and Trends in Theoretical Computer Science*.
- Eli Ben-Sasson and Jakob Nordström. **A Space Hierarchy for k -DNF Resolution.** Preprint in Technical Report TR09-047, *Electronic Colloquium on Computational Complexity (ECCC)*, <http://eccc.hpi-web.de/eccc-reports/2009/TR09-047>, April 2009.
- Eli Ben-Sasson and Jakob Nordström. **Understanding Space in Resolution: Optimal Lower Bounds and Exponential Trade-offs.** Preprint in Technical Report TR09-034, *Electronic Colloquium on Computational Complexity (ECCC)*, <http://eccc.hpi-web.de/eccc-reports/2009/TR09-034>, March 2009.

Other Experience

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| 1998-present | Interpreter and translator between Russian and Swedish/English. Engaged as interpreter for among others HM the King of Sweden, the Prime Minister, and the Speaker of the Swedish Parliament |
| 2002-2005 | President of the Swedish Association of Military Interpreters (Befälsföreningen Militärtolkar, www.militartolkar.org) |
| 2001-2002 | Secretary of the Swedish Association of Military Interpreters |
| 1994-1999 | Artistic director of the vocal ensemble Collegium Vocale Stockholm |
| 1997/98 | Compulsory national service as military interpreter at the Swedish Armed Forces Language Institute (Försvarets tolkskola). Graduated as the best student of the 1998 class |