

Curriculum Vitae

Henrik Jacobsson, PhD, MSc, BSc

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1 General information

Date of birth: October 4, 1976
Place of birth: Varberg, Sweden
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2 Education and Employment

2006- Postdoc at the Language Technology Lab of DFKI in Saarbrücken. Working in the CoSy project (<http://www.cognitivesystems.org/>).

2006 PhD in Computer Science, University of Sheffield. Supervisors: Tom Ziemke & Amanda Sharkey. External examiner Peter Tiño, internal examiner Yorick Wilks.

2001-2006 Employment as PhD student, Dept. of Computer Science, University of Skövde. Thesis title: “Rule Extraction from Recurrent Neural Networks”.

1999-2001 Employment as assistant lecturer (amanuensis), Dept. of Computer Science, University of Skövde, Sweden.

1999 M.Sc., Computer Science, University of Skövde, Sweden. Project title: “A Comparison of Simple Recurrent and Sequential Cascaded Networks for Formal Language Recognition”. Report no. *HS-IDA-MD-99-005*.

1998 B.Sc., Computer Science, University of Skövde, Sweden. Project title: “Inversion of an Artificial Neural Network Mapping by Evolutionary Algorithms with Sharing”. Report no. *HS-IDA-EA-98-113*.

1997-1999 Part time employment as teaching assistant, Dept. of Computer Science, University of Skövde, Sweden.

3 Publications

3.1 Journal publications

Jacobsson, H. (2006). The Crystallizing Substochastic Sequential Machine Extractor – CrySSMEx. *Neural Computation* 18(9), 2211–2255.

Jacobsson, H. (2005). Rule Extraction from Recurrent Neural Networks: A Taxonomy and Review. *Neural Computation*, 17(6), 1223–1263.

Jacobsson H. and Ziemke T. (2003). Improving Procedures for Evaluation of Connectionist Context-Free Language Predictors. *IEEE Transactions on Neural Networks*, 14(4), 963–966.

Linåker, F. and Jacobsson, H. (2001). Learning Delayed Response Tasks through Unsupervised Event Extraction. *International Journal of Computational Intelligence and Applications*, 1(1), 413–426.

3.2 Workshop and conference publications

Jacobsson, H., Frank, S. L. and Federici, D., (2007). Submitted to International Conference on Neural Networks 2007 (IJCNN-2007).

Jacobsson, H., Kruijff, G-J. and Staudte, M. (2007). From Rule Extraction to Active Learning Symbol Grounding. In Proceedings of ICRA 2007 Workshop on Concept Learning for Embodied Agents (to appear).

Jacobsson, H. and Ziemke T. (2005). Rethinking Rule Extraction from Recurrent Neural Networks. In A. d’Avila Garcez and J. Elman and P. Hitzler (Eds.), IJCAI-05 Workshop on Neural-Symbolic Learning and Reasoning.

Jacobsson, H. and Ziemke T. (2005). CrySSMEx, a Novel Rule Extractor for Recurrent Neural Networks : Overview and Case Study. In W. Duch, J. Kacprzyk, E. Oja and S. Zadrozny (Eds.), *Artificial Neural Networks: Formal Models and Their Applications - ICANN 2005 - Part II* (pp. 503–508). Berlin: Springer.

Jacobsson, H. and Ziemke T. (2005). Towards Automation of “Normal Science” through Empirical Machines. Presented at ECAP’05: the European Computing And Philosophy conference, Västerås, Sweden.

Stening, J., Jacobsson, H. and Ziemke, T. (2005). Imagination and Abstraction of Sensorimotor Flow: Towards a Robot Model. In: *AISB’05: Proceedings of the Symposium on Next Generation Approaches to Machine Consciousness - Imagination, Development, Intersubjectivity and Embodiment* (pp. 50–58). The Society for the Study of Artificial Intelligence and the Simulation of Behavior, UK. ISBN 1-902956-46-8.

Linåker, F. and Jacobsson, H. (2001). Mobile Robot Learning of Delayed Response Tasks through Event Extraction: A Solution to the Road Sign Problem and Beyond. In *IJCAI’01: Seventeenth International Joint Conference on Artificial Intelligence*, pp. 777–782, Morgan Kaufmann.

Bodén, M., Jacobsson, H. and Ziemke, T. (2000). Evolving context-free language predictors. In *GECCO’00: Proceedings of the Genetic and Evolutionary Computation Conference*, pp. 1033–1040, Morgan Kaufmann.

Jacobsson, H. and Olsson, B. (2000). An Evolutionary Algorithm for Inversion of ANNs. In Wang, P.P., ed., in *JCIS’00: Proceedings of The Fifth Joint Conference on Information Sciences*, pp. 1070–1073, Association for Intelligent Machinery.

Bodén, M., Jacobsson, H. and Ziemke, T. (2000). Evolving recurrent networks for context-free language prediction, presented at the *ECCS’00: Workshop for Evolutionary Computation in Cognitive Science*, Melbourne.

3.3 Technical reports

Jacobsson, H. and Ziemke, T. (2003). Reducing Complexity of Rule Extraction from Prediction RNNs through Domain Interaction, Tech. report no. *HS-IDA-TR-03-007*.

3.4 Theses

PhD thesis, computer science:

Jacobsson H. (2006). Rule Extraction from Recurrent Neural Networks. Department of Computer Science, University of Sheffield
(<http://www.dcs.shef.ac.uk/intranet/research/phdtheses/Jacobsson2006.pdf>).

M.Sc. dissertation, computer science:

Jacobsson H. (1999). A Comparison of Simple Recurrent and Sequential Cascaded Networks for Formal Language Recognition. Report no. *HS-IDA-MD-99-005*, University of Skövde, Sweden.

B.Sc. final year project, computer science:

Jacobsson, H. (1998). Inversion of an Artificial Neural Network Mapping by Evolutionary Algorithms with Sharing. Report no. *HS-IDA-EA-98-113*, University of Skövde, Sweden.

4 Scientific work

4.1 Conferences

- 2006 Program committee member of the International Joint Conference on Neural Networks (IJCNN'2007)
- 2005 Program committee member of the Joint Workshop of the Swedish AI Society and the Swedish Society for Learning Systems (AILS'2005).
- 2004 Program committee member of the Joint Workshop of the Swedish AI Society and the Swedish Society for Learning Systems (AILS'2004).
- 2003 Program chair of the Joint Workshop of the Swedish AI Society and the Swedish Society for Learning Systems (SAIS-SSLS'2003).
- 2001 Program chair of the Workshop of the Swedish AI Society (SAIS'2001).
- 1998 Technical assistant during the ICANN'98 conference in Skövde.

4.2 Reviewing

- 2006 one review for Neural Computation.
- 2006 one review IEEE Transactions on Neural Networks.
- 2006 a number of reviews for Computational Intelligence and Data Mining.
- 2006 one review for the Journal of Logic and Computation.
- 2006 one review for IEEE transactions on Fuzzy Systems.
- 2005 one review for the International Conference on Natural Computation.
- 2005 one review for Neural Computation.
- 2004 one review for the International Conference on Information Fusion.
- 2001-2006 reviewing for the Swedish AI Society workshops.
- 2001-2002 three reviews for Connection Science Journal.
- 2000 one review of a neural network book for Macmillan Press, UK.

4.3 Applied Research projects (externally funded)

- 1999-2001 Participant in The DALLAS Project, a joint project of Swedish industrial and academical participants aiming on applying learning systems techniques on real world problems ("The DALLAS project. Report from the NUTEK-supported project AIS-8: Application of Data Analysis with Learning Systems, 1999-2001", SICS Technical Report T2002:03, SICS, Kista, Sweden).
- 1999 Crack Development Prediction using ANNs, in cooperation with Ringhals (nuclear power plant), Vattenfall, Sweden.

4.4 Courses

- Sep 2006 Summer School in Learning for Cognitive Systems 2006 in Berlin, Germany.
- Mar/Feb 2002 International School on Neural Nets 'E.R. Cajonello', 5th course: "From synapses to rules: discovering symbolic rules from neural processed data" in Erice, Italy.

4.5 Invitations

- Apr/May 2004 Guest researcher at Department of Psychology, University of Warwick, UK.
- Oct 2003 Guest researcher at Max Planck Institute for Mathematics in the Sciences in Leipzig, Germany.

4.6 Memberships

- 2002-2005 Member of the board of the Swedish Society for Learning Systems.
- 2000-2002 Member of the Research Council, University of Skövde, Sweden.
- 2004 PhD Student representative in School of Humanities and Informatics board.

5 Teaching experience

5.1 Qualifications

- 1998 Attended a brief course in handling group dynamics in a pedagogical environment in connection to a project course I was supervising.
- 1999 Initiated and attended a brief course in pedagogy for student supervisors.
- 2003 Completed the course University Teaching Methods.

5.2 Course involvement and supervision of dissertations

- 1997-2006 Involvement in five Programming and Software Engineering courses as teaching assistant, lecturer and course responsible.
- 1999-2006 Involvement in four Artificial Intelligence and Artificial Neural Networks courses as lecturer and in some cases also course responsible. I also developed a new course in Artificial Neural Networks.
- 2000-2006 Supervision of 14 B.Sc. dissertations and five M.Sc. dissertations in the field of computer science. One of the M.Sc. projects won the "best Master's thesis" of the Swedish AI society (2004, John Stening's "Exploring Internal Simulations of Perception in a Mobile Robot using Abstractions").

6 Programming

I am a skilled C++-programmer and use STL and the Boost library regularly in my work. On my spare time I also work on a C++-implemented strategy game of a quite novel kind (<http://sourceforge.net/projects/nanoswarm/>). Algorithm development has been an interest since childhood. I have an open source project on <http://cryssmex.sourceforge.net>. I have also given courses in logic programming (Prolog).

7 Languages

Swedish (mother-tongue). I speak English fluently and also write all work in English. Understand some German and Spanish.