

# Curriculum Vitae: Stefan Axelsson

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PERSONAL      **Date of birth:** 7 April 1968

INFORMATION   **Nationality:** Swedish

**Marital status:** Married with one child.

EDUCATION    ◇ **Chalmers**, Dept. of Computer Science, Göteborg, Sweden. (Jan 2005)  
                 Ph.D. in Computer Science.

                 ◇ **Chalmers**, Dept. of Computer Engineering, Göteborg, Sweden. (2000)  
                 Licentiate of Engineering in Computer Engineering.

                 ◇ **Chalmers**, Göteborg, Sweden. (1987–1996)  
                 Master of Science with a degree in Computer Science and Engineering. (Finished majority of my studies in 1993 and started working full time, but didn't formally apply for the degree until 1996).

RESEARCH      Computer Security, Intrusion Detection, Information Visualisation, Human-Computer in-  
INTERESTS      teraction, Usability. Specifically:

                 Research into the application of information visualisation to intrusion detection in order to increase the usability of intrusion detection systems. Especially making automated classification algorithms understandable by the user.

SKILLS            ◇ Requirements engineering, Development processes (RUP).

                 ◇ Programming: Various languages: OO (C++, Python), Functional (O'Caml, Haskell), Script (Python, Bourne shell, AWK), Imperative (C, i386). Some need brushing up.

                 ◇ Operating systems: UNIX, Linux

                 ◇ Fluent spoken/written English, mostly fluent spoken German, native speaker of Swedish.

WORK            ◇ **PhD Student/Lecturer** Chalmers, Dept. of Computer Science, Sweden. (2002–2004)

EXPERIENCE      Research in computer security, especially the application of information visualisation to intrusion detection. Lectured and was responsible for the course: 'Systems programming in C.' Entailed, developing curriculum, lecturing, developing lab work and assignments, developing the exam paper and giving the exam. (However, not the *formal* examiner for the course).

                 ◇ **System manager** Ericsson AB, Sweden (2000–present)  
                 Developed network nodes for 2G/3G mobile Internet communication systems (GSM/GPRS, UMTS/GPRS). Worked mainly with requirements and analysis of security (including standardisation efforts), platform, characteristics (performance) and availability issues.

                 ◇ **PhD Student/Teaching Asst.** Chalmers, Dept. of Computer Engineering. (1996–2000)  
                 Research in computer security, especially intrusion detection.

                 Lectured parts of 'UNIX internals' and 'Applied Computer Security.' Teaching assistant in: 'Digital and Computer Technology', 'Realtime systems', 'Project course CS/CE programme', 'Introductory course CS/CE programme.'

- ◇ **Student Union Representative** Chalmers, Göteborg, Sweden. (fall 1998–spring 1999)  
Represented the Chalmers PhD students at the national level and as such represented the students in contacts with the government, mostly through the *SFS* ('United University Students of Sweden') and *Sveriges Doktorander* ('PhD Students of Sweden').
- ◇ **Programmer** *Stift. Medicin & Teknik* ('Foundation for Medical Technology') (1995–1996)  
Took part in the development of a general measurement and analysis system for medical use (especially EEG measurements with intra cranial electrodes on patients with severe epilepsy).
- ◇ **Teacher** *Kunskapskretsen* ('Knowledge circle'), Göteborg, Sweden. (1995)  
Teacher, high school level: Computer engineering and network administration for adult students.
- ◇ **Research assistant/System developer** SKF AB, Göteborg, Sweden. (1993–1994)  
SKF research laboratory. Designed and implemented a measurement and analysis system for measurements on roller bearings. Took part in other experiments performed by the laboratory into the behaviour of bearings.
- ◇ **Student Union Representative** Chalmers, Göteborg, Sweden. (fall 1989–spring 1999)  
Vice chairman of the Education Committee. Represented the undergraduate students in contacts with the university chancellery.

REFERENCES Available on request.

#### PUBLICATIONS **Theses**

- ◇ *Understanding Intrusion Detection Through Visualisation*, Stefan Axelsson, Thesis for the degree of Doctor of Philosophy, Department of Computer Science, Chalmers University of Technology, Göteborg, Sweden, 2005.
- ◇ *Aspects of the Modelling and Performance of Intrusion Detection*, Stefan Axelsson, Thesis for the degree of licentiate of engineering (a degree between M.Sc. and PhD.) Technical Report No 319L, Department of Computer Engineering, Chalmers University of Technology, Göteborg, Sweden, March 2000.

#### **Book**

- ◇ *Understanding Intrusion Detection Through Visualisation*, Stefan Axelsson, David Sands, In the series: Advances in Information Security, Sushil Jajodia (Ed.), Springer Verlag, Series ISSN: 1568-2633, To appear.

#### **Article in Refereed Journal**

- ◇ *The base-rate fallacy and the difficulty of intrusion detection*, Stefan Axelsson, ACM Transactions on Information and System Security (TISSEC), 3(3), pp. 186-205, ACM Press, ISSN: 1094-9224, 2000.

#### **Articles in Refereed Conference Proceedings**

- ◇ *Combining A Bayesian Classifier with Visualisation: Understanding the IDS*, Stefan Axelsson, In the proceedings of the ACM CCS Workshop on Visualization and Data Mining for Computer Security, (Held in conjunction with the Eleventh ACM Conference on Computer and Communications Security), Oct 29, 2004.
- ◇ *Visualising Intrusions: Watching the Webserver*, Stefan Axelsson, In the proceedings of the 19th IFIP International Information Security Conference (SEC2004), Toulouse France, 22-27 Aug, 2004.
- ◇ *Visualization for Intrusion Detection: Hooking the worm*, Stefan Axelsson, In the proceedings of the 8th European Symposium on Research in Computer Security (ESORICS 2003), Springer Verlag: LNCS 2808, 13-15 Oct, Gjøvik Norway, 2003.
- ◇ *The Base-Rate Fallacy and its Implications for the Difficulty of Intrusion Detection*, Stefan Axelsson, In Proceedings of the 6th ACM Conference on Computer and Communications Security, pp. 1-7, Kent Ridge Digital Labs, Singapore, November 1-4, 1999.

- ◇ *On a Difficulty of Intrusion Detection*, Stefan Axelsson, 2nd Intl. Workshop on Recent Advances in Intrusion Detection (RAID'99), Purdue University, West Lafayette, Indiana, USA, September 7-9, 1999,
- ◇ *A Comparison of the Security of Windows NT and UNIX*, Hans Hedbom, Stefan Lindskog, Stefan Axelsson, Erland Jonsson, Presented at the Third Nordic Workshop on Secure IT Systems, NORD-SEC'98, 5-6 November, 1998, Trondheim, Norway.
- ◇ *An Approach to UNIX Security Logging*, Stefan Axelsson, Ulf Lindqvist, Ulf Gustafson, Erland Jonsson, In Proceedings of the 21st National Information Systems Security Conference, pp. 62-75, Oct. 5-8, Crystal City, Arlington, VA, USA, 1998.

### Technical reports

- ◇ *Visualising the inner workings of a self learning classifier: Improving the usability of intrusion detection systems*, Stefan Axelsson, Technical Report, Dept. of Computer Science, Chalmers University of Technology, Nov 2004.
- ◇ *A Preliminary Attempt to Apply Detection and Estimation Theory to Intrusion Detection*, Stefan Axelsson, Technical Report No 00-4, Dept. of Computer Engineering, Chalmers University of Technology, Sweden, March 2000.
- ◇ *Intrusion Detection Systems: A Taxonomy and Survey*, Stefan Axelsson, Technical Report No 99-15, Dept. of Computer Engineering, Chalmers University of Technology, Sweden, March 2000.
- ◇ *Research in Intrusion Detection Systems: A Survey*, Stefan Axelsson, Technical Report No 98-17, Dept. of Computer Engineering, Chalmers University of Technology, Sweden, Dec 15, 1998 revised Aug 19, 1999.

### Publicly Available Software

- ◇ *BayesVis* Visualisation of a naive Bayesian classifier. Described in “Combining A Bayesian Classifier with Visualisation: Understanding the IDS”. Released under the GPL.
- ◇ *Chi2Vis* Visualisation of a Chi square based sliding window classifier. Described in “Visualising the inner workings of a self learning classifier: Improving the usability of intrusion detection systems”. To appear. To be released under the GPL.