

PERSONAL DATA

Name: Henning Makholm
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EDUCATION

2000–2003 **Ph.D.** in Computer Science, University of Copenhagen.
Thesis title: “A language-independent framework for region inference”.
Advised by Prof. Neil D. Jones.
1995–2000 **M.Sc.** in Computer Science, University of Copenhagen.
Thesis title: “Region-based memory management in Prolog”.
Advised by Prof. Neil D. Jones.
1992–1998 **B.Sc.** in Mathematics and Computer Science, University of Copenhagen.
1989–1992 Studentereksamen, Rødovre Gymnasium. Advanced level in Mathematics, Physics, and Music.

WORK EXPERIENCE

2006–2017 Software developer at **Octoshape**, from 2015 part of **Akamai Technologies**. Octoshape developed a high-performance client-assisted media streaming platform, including peer-to-peer and multicast technology. Responsibilities include:

- Design, implement, and maintain *OctoJ2C*, a full-program optimizing transpiler from Java to C and ActionScript.
- Major part in designing and maintaining the Java-based programming framework used in all Octoshape components, including a network abstraction layer and HTTP stack.
- Design and implement distributed file storage and on-demand video streaming architecture with peer-to-peer offload.
- Design and implement JSON/XML API for customer self-configuration of streaming services.
- Develop and maintain build infrastructure.
- Design lead for integration of Octoshape’s transport technology into Akamai’s *Ingest Acceleration* product.

2005–2006 Postdoc at the **Technical University of Denmark**, Lyngby
2003–2005 Post-doctoral research associate at **Heriot-Watt University**, Edinburgh.
2000–2003 Ph.D. fellow, **University of Copenhagen**.
1997–1999 Research programmer, **University of Copenhagen**
(member of 3-man team that redesigned and reimplemented C-Mix).
1994–1998 Teaching assistant, **University of Copenhagen** (various undergraduate C.S. courses: introductory programming, compiler construction, theory/semantics of programming languages, software engineering).
1990–1996 Various **free-lance** programming jobs, including device driver and firmware development, graphics optimization, user applications.

LANGUAGE SKILLS

- Danish:** Native speaker.
English: Fluent.
German: Was taught in school, but unpracticed. Can decipher written German.

COMPUTER SKILLS

- Theory:** Broad understanding of all major aspects of computing, from transistors to user interfaces.
In-depth knowledge of programming language design, automatic program analysis and transformation, type systems, and formal modeling of program behavior.
Knowledge of symbolic logic and proof theory.
Experience with process algebras and modeling of concurrent communicating systems.
- Programming:** Programming experience in Pascal, C, C++, Perl, Java, Tcl, Bourne shell, Elisp, Scheme, Standard ML, Prolog, JavaScript, TypeScript, \TeX macros, m4, Postscript, and Intel32 / M68K assembler. Can learn new languages and tools rapidly.
- Other tools:** Git, Cvs, Perforce, Eclipse, Visual Studio, Emacs, Unix/Linux.

OTHER TECH ACHIEVEMENTS

- Free software:** Xcftools, an image file format converter for Unix.
Mosmake, a no-nonsense recompilation manager for Moscow ML.
Full member of the Debian project, circa 2003–2006.
- Vulnerabilities:** Discovered CVE-2006-3404, a remote execution vulnerability in Gimp.
- Patents:** Named co-inventor in one patent filing by Akamai (not yet published).

OTHER ACTIVITIES

- Mathematics:** Frequent answerer at math.stackexchange.com, a Stack Overflow sister site.
Ranks 12th by reputation among all users over all time.
(<https://math.stackexchange.com/users/14366/henning-makholm>)
- Competitive programming:** Participated in Nordic Collegiate Programming Contest (non-student division) in 2012 and 2014–2017. Placed in top 3 among all Danish teams each year.
First place in Denmark (ahead of the winning ICPC-eligible team) in 2015.
- Railfanning:** Long-time interest in railway infrastructure, especially track layout and signaling technology.
- Theatre:** Treasurer of now defunct amateur theatre group *Den Ny Scene* from 1995 to 2003 and again 2004–2005.
Also worked as producer, playwright, director, set designer, lighting designer.
- Music:** Plays the piano and various percussion instruments. Composed and directed a musical adaptation of Sophocles' *Antigone* for Den Ny Scene in 1996.
Member of the orchestra in several other productions.
- Other:** Advanced layman's interests in theoretical physics, law, and natural language.