

Curriculum Vitae for Kristian Nielsen

Personal

- Born 1970.
- Married to Lene Mogensen.
- Daughter Dea (born 1996), sons Lasse (born 2001) and Asger (born 2004).

Education

- Primary school (“Folkeskolens afgangsprøve”, Otterup Skole, 1986).
- High School (“Matematisk-fysisk studentereksamen”, Nordfyns Gymnasium, 1989).
- Cand. Scient. in Computer Science, University of Copenhagen, 1996. Majoring in programming languages and compiler techniques.

Employment

- Undergraduate teaching, Department of Computer Science at the University of Copenhagen, 1992–1993. Functional programming, databases, algorithms, computability and computational complexity.
- Research assistant, Department of Computer Science at the University of Copenhagen, 1993–1994. Implementation of advanced compiler technology for functional programming languages.
- Software Developer at Risø National Laboratory, 1996–2000. Design and implementation of McStas, a simulation program for neutron scattering physics experiments, using a novel compiler-based approach. Implementation and physics of simulations within the McStas framework. Maintenance of instrument control software. Main technologies C and Perl on Linux and Digital Unix. Lots of mathematics as well.
- Software developer at Edlund A/S, 2000–2001. Development of administration systems for pension funds, based on a Windows/MSSQL platform developed in .NET and C++. Migration of development for 40+ developers to revision control (CVS) with continuous integration tests. Design of APIs and frameworks for web applications, and for a new letter generation system.
- Development manager at Sifira A/S, 2001–2006. Technical lead for the development team, responsible for all architecture and implementation of telecom applications with high scalability and uptime requirements. Technology included Solaris/Linux, server scale-out and high availability, large-scale web serving, SQL/Oracle schema design and development, IETF RFC protocol compliance, TCP/IP server programming, Perl and C application programming, telecom applications, SS7 protocol implementation. Automated continuous integration tests, unit tests, and deployment. Release management.

Independent consultant

- MySQL AB, November 2006–May 2008. Senior Software Engineer. C++ development of a number of core features in the MySQL NDB Cluster storage engine. Designed and implemented a comprehensive continuous integration test framework (“Pushbuild”) handling all commits on the MySQL server code-base, 100+ developers, 50+ branches, 40 commits per day, 2000 builds per week. Re-wrote the Windows build scripts for MySQL.

- Sifira A/S, 2006–2007. Shorter assignments in an advisory role, helping with the development of telecom applications based on the SS7 protocol stack.
- Area9, August 2008–December 2008. Implementation of an E-learning application for a major Book Publisher in USA. Graph-based algorithms for estimating and optimising student performance, client GUI implementation, server database and web-server implementation. The client side is implemented as a browser-based Flash application, implemented with the Haxe programming language and own GUI framework. The server side is MySQL/PHP based.

Experience

- Very strong analytical skills.
- Strong experience in Internet-based applications, servers in general.
- 20+ programming languages (C/C++/Java/Perl/SQL/C#/Assembler/Prolog, . . .), all paradigms (imperative, functional, logic, . . .).
- Unix/Linux (guru level, 20 years experience).
- Databases, SQL, MySQL, Oracle, PL/SQL. Schema design, application development, query optimisation.
- Networking, TCP/IP and SS7, protocol implementation and compliance.
- Systems programming, compiler techniques.
- Development tools, revision control, continuous integration tests.
- Low-level programming and optimisation, assembler and kernel programming, scaling on multi-processor architectures.
- Server scale-out and high-availability techniques, clustering.
- Design and implementation of complex algorithms.
- Database internals: transactional systems, indexing, performance, clustering, etc.
- Open Source development, communities, and licensing, 20 years experience.
- Windows as client platform.
- Network and application security.
- Strong mathematical skills, experience in numerical computation.
- Languages: Danish and English, fluent in speech and writing. Some knowledge of German and French.

Open Source Trail

- XFH (author). XFH is a compressing file-system driver for the Commodore Amiga from back in 1991.
- McStas (author, project lead until 2000). McStas (<http://www.mcstas.org/>) is a GPL'ed compiler and tool-chain for the development of simulations used by Physicists in neutron scattering.
- Wine (contributor): Wine (<http://www.winehq.org/>) is a program designed to run Microsoft Windows applications natively on Linux (and similar) operating systems. X thread-safety, low-level bug-fixing.

- DBD::Oracle (contributor): DBD::Oracle is the Oracle driver for Perl. I extended DBD::Oracle to work with legacy Oracle ProC and SQLLIB code. I also implemented native `execute_array()` support in DBD::Oracle.
- Asterisk (contributor). Asterisk is a software implemented PBX. I implemented real-time queues accessing a relational database.
- Chan_ss7 (author). Chan_ss7 is an implementation of the SS7 protocol for Asterisk.
- MySQL (contributor). Mainly work on the NDB Cluster storage engine: Online add column; rewrite of query handling part to new NdbRecord API; multi-threading framework for database engine; bug fixes.
- Miscellaneous bug fixes (small Linux kernel fixes, some Drizzle bugs, ...), general activity on mailing lists etc.

Publications

- K. Nielsen and M. H. Sørensen, *Call-by-Name CPS-Translation as a Binding-Time Improvement*, Lecture Notes in Computer Science vol. 983, Springer-Verlag, 1995.
- K. Lefmann and K. Nielsen, *McStas, a General Software Package for Neutron Ray-tracing Simulations*, Neutron News, **10/3**, 20 (1999).
- K. Lefmann and K. Nielsen, *McStas 1.1: A tool for building neutron Monte Carlo simulations*, Physica B **276–278** (2000), 152–153.
- K. Nielsen and K. Lefmann, *Monte Carlo Simulations of Neutron Scattering Instruments Using McStas*, Physica B **283** (2000), 426–432.
- K. Lefmann *et.al.*, *Added flexibility in triple axis spectrometers: The two RITAs at Risø*, Physica B (2000) **283** (2000), 343–354.
- K. Nielsen and K. Lefmann, *User and programmers guide to the neutron ray-tracing package McStas, version 1.2*, Risø Report Risø-R-1175(EN) (2000).

Blog

- <http://kristiannielsen.livejournal.com/>