

Jaroslav Ševčík

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CITIZENSHIP Czech

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Career objective

To design and develop high-quality and user-friendly software, to deliver the software to customers, to work with smart people.

Work experience

Nov 2009 – present UNIVERSITY OF CAMBRIDGE. POST-DOCTORAL RESEARCH ASSOCIATE. Working on a certified compiler from C to the x86 assembly language for Linux and Mac OS X with a precise specification of relaxed-memory multithreading and a computer checkable proof of correctness in the Coq programming language. Added synchronisation intrinsics to all stages of the compiler. Designed and programmed most of the correctness proof. The work is described in detail in a premier programming language conference POPL 2011.

Also involved in fixing problems in the Java specification that we discovered in our earlier work, published in proceedings of a high-profile conference on object-oriented programming (ECOOP 2008).

Nov 2008 – Nov 2009 UNIVERSITY OF EDINBURGH. RESEARCHER, SOFTWARE ENGINEER. Responsible for research and implementation of static analyses of multi-threaded programs, mainly whole-program analyses of Java bytecode and LLVM code generated from C++. Programmed back-end parts of several state-of-the-art static data race detectors in the Ocaml language and helped to develop a user interface for the analyses in Java (as an Eclipse plugin).

- Jan 2002 – FFASTFILL PLC., PRAGUE, LONDON. PROJECT MANAGER, SENIOR C++/C# PROGRAMMER. Coordinated team of 8 developers, co-developed core components, introduced Scrum and XP techniques to deliver software on time. Initially responsible for maintenance of the order routing and market feed server of a system for financial derivative trading (C++, Win32, (D)COM) and for development of Xetra exchange connectivity. Later lead green field development of a new high- performance fault-tolerant distributed server for order routing, market feed and risk management in Microsoft.NET (C#), including establishing an agile development process and all supporting processes (bug tracking using ClearQuest, version management using MS VSS, unit testing using NUnit, regular builds and automated unit/integration tests using our purpose-built solutions in JavaScript). Designed and programmed distributed market feed server and asynchronous and efficient RPC (order of magnitude faster than .NET Remoting because of compact messages and compile-time generation of stubs) in C#, and legacy gateway connectivity in Managed C++. Co-designed the overall system architecture and managed communication with the front-end and back-office teams. The software is used by large international banks.
- Jul 2004
- Sep 1997 – LABORATORY IMAGING S.R.O., PRAGUE. C AND C++ PROGRAMMER, TEAM LEADER. Developed a database for medical imaging using MS SQL Server, MS ADO, C++, including user interface in C++/Win32/MFC; responsible for maintenance of video capture card drivers in C. (1997–1999 part-time)
- Sep 1999;
- Oct 2000 – SELF-EMPLOYED CONSULTANT. One of the projects was an implementation of a database application for document tracking (in MS Visual Basic) in the biggest petrochemical company in the Czech Republic.
- Dec 2001
- Apr 2000 – CZECH ARMY. Military Service.
- Aug 2000
- Sep 1999 –
- Mar 2000

Education

- 2004 – 2008 PH.D., UNIVERSITY OF EDINBURGH, UK. Ph.D. thesis, “Program transformations in weak memory models”, analyses validity of optimisations in relaxed memory models, reveals bugs in the Java specification. The work affected the design of the new C++ specification (C++0x). First year spent at Rutgers University, NJ, USA, undertaking work on algorithms and computational complexity.
- 1994 – 1999 MSc, CHARLES UNIVERSITY, FACULTY OF MATHEMATICS AND PHYSICS, COMPUTER SCIENCE, PRAGUE. Master’s thesis topic - ”Translation of projective dependency structures into surface word order“.

Research papers

Jaroslav Ševčík. *Safe Optimisations for Shared-Memory Concurrent Programs*. To appear in PLDI 2011.

Jaroslav Ševčík, Viktor Vafeiadis, Francesco Zappa Nardelli, Suresh Jagannathan, Peter Sewell. *Relaxed-Memory Concurrency and Verified Compilation*. POPL 2011.

Francesco Zappa Nardelli, Peter Sewell, Jaroslav Ševčík, Susmit Sarkar, Scott Owens, Luc Maranget, Jade Alglave. *Relaxed memory models must be rigorous*. EC² (2009).

Jaroslav Ševčík, David Aspinall. *On Validity of Program Transformations in the Java Memory Model*. In ECOOP 2008. pp27–51, LNCS 5142, Springer-Verlag. *Best paper award finalist*.

David Aspinall, Jaroslav Ševčík. *Formalising Java's Data Race Free Guarantee*. In TPHOLs 2007. pp22–37, LNCS 4732, Springer-Verlag.

David Aspinall, Jaroslav Ševčík. *Java memory model examples: Good, bad and ugly*. In VAMP 2007. Technical Report ICIS-R07021, Radboud University Nijmegen.

Jaroslav Ševčík. *Proving Resource Consumption of Low-level Programs Using Automated Theorem Provers*. In Bytecode 2007, pp133–147, ENTCS 190/1, Elsevier.

Awards

2005 – 2008 EPSRC GRANT – Resource Quantification in e-Science Technologies.

2004 – 2005 RUTGERS FELLOWSHIP.

1994 – 1997 CHARLES UNIVERSITY PERFORMANCE SCHOLARSHIP.

1994 HIGH HONORS. HIGH-SCHOOL DEGREE ("Maturita")

1994 NATIONAL OLYMPIAD IN INFORMATICS – 5th place.

1994 NATIONAL OLYMPIAD IN MATHEMATICS – 13th place.

Teaching experience

Fall 2010 UNIVERSITY OF CAMBRIDGE. Several lectures about multicore programming (MPhil course).

Fall 2005, 2006, 2007 UNIVERSITY OF EDINBURGH. Algorithms and Data Structures. Tutoring.

Spring 2005 RUTGERS UNIVERSITY. Principles of Programming Languages. Tutoring, grading homeworks/exams.

Fall 2004 RUTGERS UNIVERSITY. Numerical Analysis. Tutoring, grading homeworks/exams, occasional lectures.