

Valentin R. Koch

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Canada

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MATHEMATICAL AND OPERATIONS RESEARCH SKILLS

Numerical Analysis: Interpolation and Approximation, Finite Differences, Fixed Point Algorithms
Optimization: Large-scale MILP, Constraint Programming, Quadratic Programming, IPM's, Quasi-Newton, Lipschitz Optimization, Simulated Annealing, Network Flows
Simulation: Monte Carlo
Business Process Modeling: UML, RUP
Business Experience: High-Tech, Civil Engineering, Health Care, Finances

TECHNICAL SKILLS

Programming Languages: C, C++, Java, Matlab, Scilab, Perl, Pascal, Tcl/Tk, Visual Basic, Fortran, SQL, PHP, Shell scripts, XML/XSL
Solvers and Libraries: GUROBI, CPLEX, Cbc/Clp, ILOG CP, Lancelot, Cfsqp, MPI, PVM, STL
Databases: MySQL, Oracle, MS SQL, Sybase, Superbase
Operating Systems: Linux, UNIX, Mac OS X, Windows, OS/2, MS-DOS
Communication: TCP/IP, RPC, CORBA, RMI, libnids, libnet
Design & Analysis: UML, Design Patterns (GoF95), Booch

PROFESSIONAL EXPERIENCE

Softree Technical Systems Inc., Vancouver, Canada

MITACS Accelerate Internship

September 2009 - April 2010

- Optimization of roadway design and construction costs. Mathematical modeling of large *mixed-integer linear programs* (MIP) and implementation with C++ on state-of-the-art MIP solvers. Improvement of average road construction costs of 4% (up to 18%).

The University of British Columbia, Kelowna, Canada

Research Assistant

May 2006 - April 2010

- Optimization of radiation treatment plans. Mathematical modeling and implementation using an adaptable and extensible software system for radiation treatment planning. Integration with global optimization solvers and high performance grid-computing systems using C/C++ and MPI on the Westgrid computing facility.

TIC The Internet Company - Inter.net, Lucerne, Switzerland

Systems Engineer

June 2003 - May 2004

- Unix Systems Engineer for an Internet Service Provider. Responsible for 40 servers (Email, DNS, Web, Routing), mainly Linux (some Solaris and BSD).
- Development of internal accounting and system administration application in Java and Perl.

dotBase solutions informatiques SA, Geneva, Switzerland

Senior Software Engineer, internal

April 2002 - January 2003

- Analysis, design and development of an internal invoice and bonus management application for IT consulting and services. Development in Java J2EE on IBM Websphere and Tomcat.

Senior Software Engineer at Nagravision SA

December 2000 - March 2002

- External Software Engineer at Nagravision, a Kudelski Group company and a world leader in digital content security. Analysis, design and development of a real-time streaming control software for a Near Video on Demand system. Development in C/C++ on tru64Unix, using CORBA, RPC, STL, ACE.

- High redundancy system, interfacing multiple media servers over different communication protocols.

Unilog GDI SA, Geneva, Switzerland

Software Engineer at Nagravision SA

August 1999 - November 2000

Business Analyst at SGS

October 1998 - July 1999

- Consultant at SGS, the world's leading inspection, verification, testing and certification company. Partial analysis and design of a management system for goods import/export verifications services in the context of a Y2K re-engineering project.
- Requirements analysis using Rational Rose UML design system (Use cases).

Software Engineer, internal

May 1998 - September 1998

The Fantastic Corp., Zug, Switzerland

Contract Software Developer

January 1998 - April 1998

- Development of Java Applets for stock market information and news display.

Softcash AG, Waedenswil ZH, Switzerland

Junior Software Engineer

January 1997 - December 1997

- Analysis, design and development of modules for a treasury application for large corporations, including business rules for cash management, foreign exchange and capital transfer, credit and loan management.
- Development of external and internal accounting software and communication interfaces.

Landis & Staefa Ltd., Zug, Switzerland

Junior Software Engineer

September 1995 - August 1996

- Software development of a prototype for a redundant storage system for historical data of commercial building control systems. A multithreaded application, written in C on OS/2, with Oracle and Sybase.

EDUCATION

University of British Columbia, Canada

MSc, Mathematics (GPA: 96.8/100, Governor General's Gold Medal)

September 2008 - April 2010

- Master Thesis: *Optimizing earthwork block removal in road construction.*

BSc Hons., Computer Science, Minor Mathematics (GPA: 92.2/100)

September 2004 - April 2008

- Honours Thesis: *An Application of the Extended Cutting Angle Algorithm in Radiation Therapy.*

College of Commercial and Industrial Training, Zoug, Switzerland

Electronic Technician

August 1991 - May 1995

LANGUAGES

Swiss German (native), English (excellent), French (excellent), German (excellent)

AWARDS AND HONORS

- Governor General's Academic Gold Medal 2009-2010, Award for the highest academic achievement at the graduate level.
- MITACS Accelerate Internship Award 2009, Mathematics of Information Technology and Complex Systems
- Pacific Century Graduate Scholarship 2008 and 2009, Province of British Columbia, Ministry of Advanced Education
- Undergraduate Research Award 2007, National Sciences and Engineering Research Council of Canada
- Dean's List of Honours 2004, 2005, 2006, 2007 and 2008, University of British Columbia
- Trek Excellence Scholarship 2006 and 2007, University of British Columbia
- OSTEC Prize in Science 2007, Okanagan Science and Technology Council