

Neil Dickson

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<http://www.neildickson.com/>

EDUCATION

Bachelor of Computer Science, Software and Computing Stream, Minor in Mathematics, Co-op Option

Carleton University

2004-2009

- Completed, 11.90 of 12.00 CGPA, Corresponding letter grade: A⁺
- Nortel Networks Scholarship (\$6,000 × 4 years), Tracey and Siva Ananmalay Scholarship in Computer Science (\$1,100), John R. Pugh Scholarship (\$1,150), Derek Rymerson Memorial Scholarship 2007 (\$1,500), Derek Rymerson Memorial Scholarship 2008 (\$1,750), Carleton University Medal in Computer Science

HIGHLIGHTS OF QUALITIES

- Enthusiastic, creative, and hard-working for difficult challenges and projects
- Experience with Assembly Language (mostly x86), Java, C/C++, etc.
- Experience with IDE development, operating system development, speed optimization, NP-hard problem solving, reverse-engineering, documentation and specifications

WORK EXPERIENCE

Software Developer

Jun. 2009-Present

D-Wave Systems Inc., Burnaby, British Columbia

- Optimizing AQUA@Home quantum simulation software; 10x-20x speedup so far
- Quantum computer algorithm design and analysis

Software Development Engineer

May-Jul. 2008

Microsoft, Redmond, Washington

- Developed a conversion library from Works Database format to Excel format

Embedded Systems Software Developer

Jan.-Apr. 2008

Research In Motion, Waterloo, Ontario

- Created a system to inject profiling code into the Bluetooth library source to gain detailed timing information
- Performed Bluetooth throughput testing on BlackBerry devices

Quantum Application Designer (official title: Software Co-op Student)

May-Aug. 2007

D-Wave Systems Inc., Burnaby, British Columbia

- Designed a wide variety of potential applications that could make use of a quantum computer that can find approximate solutions to NP-hard problems
- Partly implemented one such potential application
- Worked for the C.T.O. on several small projects, most of an investigatory nature
- Details are currently confidential

Quantum Application Programmer (official title: Research Assistant) May-Dec. 2006
D-Wave Systems Inc., Burnaby, British Columbia

- Designed and implemented a molecular substructure comparison program that was one of the three applications in the world's first public demonstration (February 13th, 2007) of a quantum computer being used for practical purposes
- Designed and implemented, with a team, a Java & C software framework allowing problems of clients to be solved on quantum devices
- Designed and implemented algorithms for NP-hard combinatorial optimization problems, especially Maximum Independent Set (same as Max Clique & Min Vertex Cover) and Ising model energy minimization (same as Weighted Max-2-SAT & Binary Quadratic Programming)

CANDU Reactor Control Code Reverse-Engineer (official title: Student) May-Aug. 2005
Atomic Energy of Canada Limited, Chalk River, Ontario

- Created program specifications from Varian assembly source listings of 9 "Classic" Digital Control Computer (DCC) annunciation system programs, and partial specifications for 3 fuel handling system programs, totalling well over 20,000 lines of listing
- Wrote a plug-in on own time to configure an assembly language editor, greatly improving code readability for the DCC Replacement project; the free editor is now used on the project, replacing the previous editor that cost annually per person

APPLIED PROJECTS

Integrated Development Environment Programming (Inventor IDE)

- (see <http://www.codecortex.com/ide/>)
- Fully-integrated documentation as a key focus, to aid in PwnOS development
- Designed for the flexibility to support many languages, but current releases focus on x86 assembly language
- Supports auto-completion, refactoring, and error-detection

Operating System Programming (PwnOS, pronounced "Own OS")

- (see <http://www.neildickson.com/os/>)
- Team and project management
- Boot process and kernel development and optimization
- Thread scheduling and memory management programming
- Device I/O management and configuration: ATA, APIC, ACPI, PS/2 mouse & keyboard
- Filesystem programming: NTFS, FAT

EXTRA-CURRICULAR ACTIVITIES

Vancouver Concert Band: Horn Player Sept. 2009-Present

- Performed in concerts on French horn.

Carleton Chamber Music Ensemble: Cellist and Horn Player 2006-2009

- Performed in many different small ensembles (over 20) on cello and French horn in April 2006, April 2007, December 2007, December 2008, and April 2009.

COURSES

Title	Code	Term	Grade
Honours Project	COMP 4905	Summer 2009	5.5/6.0 (A)
Design & Analysis of Algorithms II	COMP 4804	Winter 2009	6.0/6.0 (A ⁺)
Introduction to Computer Vision	COMP 4900	Winter 2009	6.0/6.0 (A ⁺)
Directed Study	COMP 4901	Winter 2009	6.0/6.0 (A ⁺)
Introduction to [Music] Composition	MUSI 2602	Winter 2009	6.0/6.0 (A ⁺)
Introduction to Logic	PHIL 2001	Winter 2009	6.0/6.0 (A ⁺)
Computational Geometry	COMP 5008	Fall 2008	5.5/6.0 (A)
Parallel Computing	COMP 4009	Fall 2008	6.0/6.0 (A ⁺)
Distributed Operating Systems	COMP 4000	Fall 2008	6.0/6.0 (A ⁺)
Numerical Analysis	MATH 3806	Fall 2008	6.0/6.0 (A ⁺)
Planetary Astronomy	PHYS 1901	Fall 2008	5.5/6.0 (A)
Operating Systems	COMP 3000	Fall 2007	6.0/6.0 (A ⁺)
Programming Paradigms	COMP 3007	Fall 2007	6.0/6.0 (A ⁺)
Mobile Robot Programming	COMP 4807	Fall 2007	6.0/6.0 (A ⁺)
Open Source Software Engineering	COMP 4900	Fall 2007	6.0/6.0 (A ⁺)
Classical Music History	MUSI 1001	Fall 2007	6.0/6.0 (A ⁺)
Object-Oriented Software Engineering	COMP 3004	Winter 2007	6.0/6.0 (A ⁺)
Database Management Systems	COMP 3005	Winter 2007	6.0/6.0 (A ⁺)
Design & Analysis of Algorithms I	COMP 3804	Winter 2007	6.0/6.0 (A ⁺)
Abstract Algebra I	MATH 2108	Winter 2007	6.0/6.0 (A ⁺)
Programming in C++	COMP 2404	Winter 2006	6.0/6.0 (A ⁺)
Computer Organization	COMP 2003	Winter 2006	6.0/6.0 (A ⁺)
Linear Algebra II	MATH 2107	Winter 2006	6.0/6.0 (A ⁺)
Probability Models	STAT 2605	Winter 2006	6.0/6.0 (A ⁺)
Theoretical [Music] Studies II	MUSI 1702	Winter 2006	6.0/6.0 (A ⁺)
Abstract Data Types and Algorithms	COMP 2402	Fall 2005	6.0/6.0 (A ⁺)
Discrete Structures II	COMP 2805	Fall 2005	6.0/6.0 (A ⁺)
Internet Application Programming	COMP 2405	Fall 2005	6.0/6.0 (A ⁺)
Calculus II	MATH 2007	Fall 2005	6.0/6.0 (A ⁺)
Theoretical [Music] Studies I	MUSI 1701	Fall 2005	6.0/6.0 (A ⁺)
Design and Implementation of Computer Apps	COMP 1406	Winter 2005	6.0/6.0 (A ⁺)
Introduction to Systems Programming	COMP 1402	Winter 2005	6.0/6.0 (A ⁺)
Linear Algebra I	MATH 1104	Winter 2005	6.0/6.0 (A ⁺)
Electromagnetism and Wave Motion	PHYS 1004	Winter 2005	6.0/6.0 (A ⁺)
Management Accounting	BUSI 1002	Winter 2005	5.5/6.0 (A)
Object-Oriented Programming	COMP 1405	Fall 2004	6.0/6.0 (A ⁺)
Discrete Structures I	COMP 1805	Fall 2004	6.0/6.0 (A ⁺)
Elementary Calculus I	MATH 1007	Fall 2004	6.0/6.0 (A ⁺)
Mechanics and Thermodynamics	PHYS 1003	Fall 2004	6.0/6.0 (A ⁺)
Financial Accounting	BUSI 1001	Fall 2004	6.0/6.0 (A ⁺)