Curriculum Vitae

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Highlights:

- **Teaching Awards:** I am committed to ensuring that our students get the best education possible. This includes a strong commitment to teaching, being available and approachable, ensuring that the environment is conducive to learning, and treating all students with respect. I have been awarded Faculty of *Computer Science Dean's Award for Teaching Excellence* (2014) and the *Srini Award for Teaching Excellence* by the Dalhousie University Student Computer Science Society for two years in a row (2009 and 2010).
- **Student Teaching Evaluations:** The student teaching evaluations that I have received over the past six years reflect my teaching competency and my commitment to teaching. Over the past eight years I have taught 29 courses. The median student evaluation score over these courses is 4.33.
- **Accessibility and Availability:** I strive to teach to the best of my ability, and present students with multiple modes for learning: visual, aural, and written. If a student comes in, I stop what I am doing and give them my undivided attention. This applies to all students, not just the ones taking my courses. My office is near the Learning Center, which I find extremely useful for early detection of any issues that may affect the students.
- **Course Development:** I have developed and overhauled a variety of courses over my career. Courses such as CSCI 1106 and CSCI 1107 use innovative teaching methods and are designed to give students a project-based self-driven learning environment. CSCI 4176 is a new capstone style course in mobile computing that lets students apply what they have learned over their four years at Dalhousie and channel their creativity to create new mobile applications. Other courses such as CSCI 3132 and CSCI 3136 have been completely overhauled, ensuring that they remain relevant and valuable.
- **Chair of the Curriculum Committee:** During my tenure as committee chair, the committee accomplished many initiatives including:
  - Unification of the first year BCS and BInf programs
  - Creation and implementation of a Science with a Lab Policy
  - Creation of recommendations on the contents and dissemination of syllabi
  - Creation of a course archive for documenting past course offerings
  - Course mapping of the core BCS and Binf programs
  - Creation of a Minor in Informatics for BA students
  - Coordination of instruction to smooth the transition from 1st to 2nd year
  - Creation of a mentoring program for new instructors
  - Organization of a number of workshops focused on diversity in the classroom.
- **Outreach:** Over the past two years I have presented a variety of workshops to various student groups. The students ranged from primary school all the way to senior highschool students. These workshops ranged from brief 15 minute demonstrations to three hour self-contained sessions where the students designed and programmed robots to perform a variety of tasks.

Citizenship: Canadian

Education:

Doctor of Philosophy in Computer Science

University of British Columbia, 1999 - 2003,
Thesis: Growth Processes on Formulae and Reversible Circuits,
Supervisor: Dr. Nicholas Pippenger.

Master of Science in Computer Science

University of British Columbia, 1997 - 1999,
Thesis: Models and Characterizations of 1-Way Quantum Finite Automata.
Supervisor: Dr. Nicholas Pippenger.

Bachelor of Mathematics in Computer Science, Physics Minor, with Honors

University of Waterloo, 1992 - 1997.

Academic and Professional Experience:

July 2012 — Present

Senior Instructor in the Faculty of Computer Science, Dalhousie University,
My area of focus is theory of distributed system and distributed computing.

July 2009 — June 31, 2012

Instructor in the Faculty of Computer Science, Dalhousie University,
My area of focus is theory of distributed system and distributed computing.

August 2005 — July 2009

Assistant Professor in the Department of Applied Computer Science, University of Winnipeg,
My area of focus is theory of distributed computing. I investigated the implementation of various distributed objects in synchronous, semisynchronous and peer-to-peer systems.

September 2003 — August 2005

Post-Doctoral Fellow in the Department of Computer Science, University of Toronto,
In collaboration with Faith Ellen, I investigated the implementation complexity of various distributed objects in synchronous shared memory systems.

January 2002 — April 2002

Instructor for CPSC415 Advanced Operating Systems offered by Department of Computer Science, University of British Columbia. Overhauled and redeveloped the 4th year operating system course, completely rewriting the syllabus, lectures, and assignments. Received a 4.38 (out of 5) student evaluation. Duties included lecturing, preparing lectures, assignments, and exams, meeting with students, and overseeing three teaching assistants.

Spring 1998, Spring 1999, Spring 2001

Teaching Assistant for Alternative Routes to Computing (ARC) program. I was responsible for supporting a small group of students whose first degrees were from a nontechnical area. These students were working through a fast-tracked computer science diploma program and required additional support to understand mathematical and computer science concepts. The majority of the work involved tutorials and one-on-one sessions.

May 1997 - August 1997

Systems Developer, Watcom International, Waterloo, ON
I was responsible for maintaining and extending the F77 Fortran Compiler Project. The duties included extending functionality, improving compiler optimizations, and porting the entire system to the DEC Alpha architecture. Concurrently, I maintained and extended the C Library to operate on Windows and OS/2, running on Intel x86, DEC Alpha, and Power PC processors.

July 1996 - September 1996
Edinburgh University, Edinburgh, Scotland
During my tenure I developed a parallel radiosity system specifically for the Cray-T3D architecture.

Teaching Awards:

The Faculty of Computer Science Dean's Award for Teaching Excellence presented by Faculty of Computer Science, Dalhousie University, 2014.

The Srini Award for Teaching Excellence presented by the Dalhousie University Computer Science Society, 2010.

The Srini Award for Teaching Excellence presented by the Dalhousie University Computer Science Society, 2009.

Teaching Experience:

Fall 2009 - present Faculty of Computer Science, Dalhousie University

CSCI 3136 Principles of Programming Languages	Winter 2014
CSCI 2110 Computer Science III: Data Structures	Winter 2012
CSCI 3132 Object Orient Programming	Fall 2011
CSCI 4176 Mobile Computing	Fall 2010, Fall 2011, Fall, 2012, Fall 2013, Fall 2014
CSCI 3120 Operating Systems	Winter 2010, Winter 2011, Winter 2012, Winter 2014,
CSCI 1106 Animated Computing	Fall 2009, Fall 2010, Winter 2011, Fall 2012, Fall 2013, Fall 2014
CSCI 1107 Social Computing	Winter 2010
CSCI 2132 Software Development	Fall 2009

Fall 2005 - Fall 2009 Department of Applied Computer Science, University of Winnipeg

ACS 7301 The Implementation and Impact of Peer-to-Peer Systems	Winter 2009
ACS 3931 Principles of Operating Systems	Fall 2006, Fall 2007
ACS 3911 Computer Networks	Winter 2007, Winter 2008, Winter 2009
ACS 2906 Computer Architecture and Software Systems	Winter 2006, Fall 2006, Winter 2008, Fall 2008
ACS 2947 Data Structures and Algorithms	Winter 2006, Winter 2007, Fall 2007, Fall 2008
ACS 1903 Programming Fundamentals I	Fall 2005

Winter 2002 Department of Computer Science, University of British Columbia

CPSC 415 Advanced Operating Systems	Winter 2002

Curriculum Development

- Collaborated with Professor Susan Holmes of the College of Continuing Education to present teaching workshops for faculty of the Faculty of Computer Science.
- Chaired the Curriculum Committee in the 2013/2014 academic year. Focus is on creating more teaching resources for faculty and CIPS accreditation. Created the Minor in Informatics.
- Chaired the Curriculum Committee in the 2011/2012 academic year. Created and implemented a variety of policies dealing with 1st/2nd year coordination and midterm scheduling. Investigated how we can better support international students and worked to create a series of teaching workshops for the Faculty.

- Chaired the Curriculum Committee in the 2010/2011 academic year, overseeing the overhaul of the first year programs, instituting a Science with a Lab policy, creating a set of recommendations on the content and delivery of syllabi, and instituting a course archive. I was a member of the Curriculum Committee in 2009/2010.
- Overhauled the curriculum for CSCI 3132 Object Oriented Programming, including new lectures, assignments, and projects.
- Developed CSCI 4176 Mobile Computing, including syllabus, lectures, assignments, and projects.
- Developed a new set of lectures and assignments for CSCI 2110 Computer Science III.
- Developed a new set of lectures and assignments for CSCI 3120 Operating Systems.
- Collaborated in the development of CSCI 1106 Animated Computing. The course was developed to provide hands-on based learning and appeal to students throughout the university. In collaboration with the Center for Teaching and Learning the course has been revised on a regular basis.
- Collaborated in the development of CSCI 1107 Social Computing. The course was developed to provide user-centered view of computing that appeals to students throughout the university. In collaboration with the Center for Teaching and Learning the course has been revised on a regular basis.
- Developed a new set of lectures, labs, and assignments for CSCI 2132 Software Development.
- Developed the graduate course ACS 7301 The Implementation and Impact of Peer-to-Peer Systems.
- Developed ACS 3931 Principles of Operating Systems, including syllabus, lectures, and assignments.
- Overhauled ACS 3911 Computer Networks, including all lectures and assignments. I experimented with teaching this course in both a top-down and bottom-up fashion to determine the best way to present the material.
- Overhauled ACS 2906 Computer Architecture and Software Systems. The breadth and depth of the material was increased and new lectures, and assignments were created. The course became one of the more challenging courses in the curriculum.
- Created new lectures and assignments for ACS 2947 Data Structures and Algorithms.
- Created new lectures and assignments for ACS 1903 Programming Fundamentals I.
- Overhauled CS 415 Advanced Operating Systems. Completely rewrote this course, changing the course material, the lectures and assignment structure.

Journal Publications:

Alex Brodsky, Faith Ellen Fich, and Philipp Woelfel, “Fully-Adaptive Algorithms for Long-Lived Renaming”, Distributed Computing, (accepted) 2011.

Jan Baekgaard Pedersen, Alex Brodsky, and Jeffery Samson, “Approximating the Buffer Allocation Problem Using Epochs”, Journal of Parallel and Distributed Computing, 68, 1263-1282, 2008.

Alex Brodsky and Shlomo Hoory, “Simple Permutations Mix Even Better”, Random Structures and Algorithms, 32(3), 274-289, 2008.

Alex Brodsky and Nicholas Pippenger, “The Boolean Functions Computed by Random Boolean Formulas OR How to Grow the Right Function”, Random Structures and Algorithms, 27(4), 490–519, 2005.

Alex Brodsky, Jan Bækgaard Pedersen, and Alan Wagner, “On the Complexity of Buffer Allocation in Message Passing Systems”, Journal of Parallel and Distributed Computing, 65(6), 692-713, 2005.

Alex Brodsky, "An Impossibility Gap Between Width-4 and Width-5 Permutation Branching Programs", Information Processing Letters, 94(4), 159–164, 2005.

Alex Brodsky, Stephane Durocher, and Ellen Gethner, "Toward the Rectilinear Crossing Number of K_n: New Drawings, Upper Bounds, and Asymptotics", Journal of Discrete Math, 262, 2003.

Alex Brodsky and Nicholas Pippenger, "Characterizations of 1-Way Quantum Finite Automata", SIAM Journal on Computing, 31(5), 1456-1478, 2002.

Alex Brodsky, Stephane Durocher, and Ellen Gethner, "The Rectilinear Crossing Number of K_{10} is 62", The Electronic Journal of Combinatorics, 8(1), R23, 2001.

Conference and Workshop Publications:

Deborah Kiceniuk, Connie Adsett, Alex Brodsky, Bonnie MacKay, Julie Lalande, Janice Fuller, "Enhancing Student Engagement in Applied Science Courses: A Case Study in Computer Science", Proceedings of the 31st Annual STLHE Conference, June, 2011.

Alex Brodsky and Scott Lindenberg, "Our Brothers' Keepers, Secure Routing with High Performance", Proceedings of the 10th International Symposium on Stabilization, Safety, and Security of Distributed Systems, 2008.

Alex Brodsky, "Brief Announcement: Our Brothers' Keepers, Secure Routing with High Performance", Proceedings of the 27th Symposium on Principles of Distributed Computing, 2008.

Alex Brodsky and Dmitry Brodsky, "Brief Announcement: Trinity, A Distributed Defense Against Transient Spambots", Proceedings of the 26th Symposium on Principles of Distributed Computing, 2007.

Alex Brodsky and Dmitry Brodsky, "A Distributed Content Independent Method for Spam Detection", Proceedings of the 1st USENIX Workshop on Hot Topics in Understanding Botnets, 2007.

Alex Brodsky, Faith Ellen Fich, and Philipp Woelfel, "Fully-Adaptive Algorithms for Long-Lived Renaming", Proceedings of the 20th International Symposium on Distributed Computing, LNCS 4167, 413–427, 2006.

Jan Bækgaard Pedersen and Alex Brodsky, "Approximating the Buffer Allocation Problem Using Epochs", Proceedings of the 18th IASTED International Conference on Parallel and Distributed Computing and Systems, 2006.

Matei David, Alex Brodsky, and Faith Ellen Fich, "Restricted Stack Implementations", Proceedings of the 19th International Symposium on Distributed Computing, LNCS 3724, 131-157, September, 2005.

Alex Brodsky and Faith Ellen Fich, "Efficient Synchronous Snapshots", Proceedings of the 23rd Annual ACM Symposium on Principles of Distributed Computing, 70-79, 2004.

Alex Brodsky, "Reversible Circuit Realizations of Boolean Functions", Proceedings of the 3rd IFIP International Conference on Theoretical Computer Science, 2004.

Dmitry Brodsky, Alex Brodsky, Jody Pomkoski, Shihao Gong, Michael J. Feeley, and Norman C. Hutchinson, "Using File-Grain Connectivity to Implement a Peer-to-Peer File System", Proceedings of the International Workshop on Reliable Peer-To-Peer Distributed Systems, 2002.

Dmitry Brodsky, Jody Pomkoski, Alex Brodsky, Michael Feeley, Norm Hutchinson, "Exploiting Version Immutability to Simplify File Replication". Proceedings of the 18th ACM Symposium on Operating Systems Principles, (poster), October, 2001.

Alex Brodsky, Dmitry Brodsky, Ida Chan, Yvonne Coady, Stephan Gudmundson, Jody Pomkoski, Joon Suan Ong, "Coping with Evolution: Aspects vs Aspirin?", OOPSLA Workshop on Advanced Separation of Concerns, October, 2001.

Yvonne Coady, Alex Brodsky, Dmitry Brodsky, Jody Pomkoski, Stephan Gudmundson, Joon Suan Ong, Gregor Kiczales, "Can AOP Support Extensibility in Client-Server Architectures?" ECOOP 2001 – Advanced Separation of Concerns Workshop, 2001

Grants and Awards:

NSERC Discovery Grant Held 2006-2009, value $14,000 per annum.

NSERC Post Doctoral Fellowship Held 2003-2005, value $40,000 per annum.

University Graduate Killam Fellowship Held 2001-2003, value $23,000 per annum.

University Graduate Killam Fellowship Held 1999-2001, value $23,000 per annum.

NSERC Post Graduate Scholarship B Held 1999-2001, value $19,100 per annum.

University Graduate Fellowship Held 1998-1999, value $10,000.

Bell Sygma Academic Award Won in 1997, value $1,500.

Federation of Chinese Canadian Professionals Won in 1996, value $500.

Governor General of Canada Bronze Medallion Won in 1992.

Graduate Student Supervision

Joseph Howse MCS, 2010 - 2012 (Graduated)

Frank He M.EComm, 2012 (Graduated)

Diana Paterson 2013 - present (In progress)

Administration and Service

September 2009 - present Faculty of Computer Science, Dalhousie University

Dal Apps Contest Organizer (Faculty/University)

December 2011 - March 2012

Curriculum Committee (Faculty)

September 2013 - present Chair
May 2013 - August 2013 Chair
September 2012 - December 2012 Member
September 2011 - August 2012 Chair
September 2010 - August 2011 Chair
May 2010 - August 2010 Member
March 2010 - April 2010 Chair
September 2009 - March 2010 Member

Senate Academic Appeals Committee (University)

September 2013 - present Chair
September 2012 - August 2013 Chair
September 2011 - August 2012 Member
September 2010 - August 2011 Member

October 2009 - August 2010 Member

Instructor Search Committee (Faculty)

May 2011 - July 2011 Member
January 2012 - April 2012 Member

Member, Undergraduate Committee (Faculty)

September 2011 - August 2012 Member
September 2010 - August 2011 Member
September 2009 - August 2010 Member

Member, Outreach Committee (Faculty)

September 2012 - December 2012

Course Coordination, CSCI 1106 and CSCI 1107 (Faculty)

September 2011 - August 2012 Coordinator
September 2010 - August 2011 Coordinator

Manager, Learning Center September 2009 - August 2010

September 2005 - July 2009 Department of Applied Computer Science, University of Winnipeg

Member, Chair Search Committee September 2008 - July 2009

Member, Department Personnel Committee September 2007 - July 2009

Chair, Department Review Committee September 2006 - August 2007

Member, NSERC Scholarship Selection Committee September 2005 - July 2009

Member, Department Review Committee September 2005 - August 2006

September 1999 - August 2003 Department of Computer Science, University of British Columbia I served on a variety of department committees as the graduate student representative.

Professional Activities

- Member, Association of Computing Machinery (ACM)
- Member, IEEE and IEEE Computing
- Publicity Co-Chair, Symposium on the Principles of Distributed Computing (PODC), 2006
- Publicity Co-Chair, Symposium on the Principles of Distributed Computing (PODC), 2007
- Workshop Co-Chair, Symposium on the Principles of Distributed Computing (PODC), 2008
- Reviewer: Discrete Mathematics, Theoretical Computer Science (TCS), Mathematical Foundations of Computer Science (MFCS), Information Processing Letters (IPL), International Symposium on Algorithms and Computation (ISAAC), Symposium on Theoretical Aspects of Computer Science (STACS), Symposium on the Principles of Distributed Computing (PODC).