

# Borys J. Bradel

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## Education

### **Doctor of Philosophy - Computer Engineering**

2003 - Apr. 2010 (expected) University of Toronto  
Working Thesis Title: Automatic Program Parallelization Using Traces  
Supervisor: Tarek S. Abdelrahman

### **Master of Applied Science - Computer Engineering**

2001 - 2004 University of Toronto  
Thesis: The Use of Traces in Optimization  
Supervisor: Tarek S. Abdelrahman

### **Bachelor of Applied Science with Honours - Computer Engineering**

1997 - 2001 University of Toronto  
Specialized in the Software Engineering Option  
Certificate in Preventive Engineering and Social Development  
3.97 Cumulative GPA and a 92.4 average over 4 years

## Work Experience

OPSEU Pension Trust

**Software Consultant** May 2009 - July 2009

Developed a performance tool in VBA that analyzed financial data and produced summary results.

University of Toronto - Department of Materials Science and Engineering

**Software Consultant** May 2002 - January 2004

Modified and extended software that acquires, analyzes, and presents information, such as video images and electrical data, generated from a welding process.

**Research Assistant** April 1999 - December 2000

Designed and modified software that acquires, analyzes, and presents information, such as video images and electrical data, generated from a welding process.

**Summer Intern**

May 1998 - August 1998

Created programs and assisted data acquisition and analysis efforts.

**Teaching Experience**

University of Toronto - Department of Electrical and Computer Engineering

**Instructor**

January 2006 - June 2007

Sole instructor responsible for entire course.

ECE106 Programming Fundamentals - 2007 First Summer Term

ECE540 Optimizing Compilers - 2006 Winter Term

**Teaching Assistant**

September 2001 - present

Marked assignments, supervised students in computer labs, presented material in tutorials, and lectured if the course instructor was away.

ECE452 Computer Architecture

2005–2008 Fall Terms

marking, tutorials, lectures

2004 Fall Term

marking, tutorials

ECE106 Programming Fundamentals

2007 Winter Term

marking, tutorials, lectures

2005 Winter Term

marking, labs

ECE552 Computer Architecture

2001, 2002 Fall Terms

marking, tutorials

ECE450 Software Engineering 2

2002 Winter Term

marking, tutorials

University of Toronto - Department of Mechanical and Industrial Engineering

**Teaching Assistant**

January 2003 - April 2003

Marked assignments and presented material in tutorials

APS103 Engineering, Society, and Environment I

2003 Winter Term

marking, tutorials

**Publications, Peer Reviewed Full Papers**

Borys J. Bradel and Tarek S. Abdelrahman, "The Use of Hardware Transactional Memory

for the Trace-Based Parallelization of Recursive Java Programs”, Proc. of the Int’l Conference on Principles and Practices of Programming in Java, Pages 101-110, 2009.

Borys J. Bradel and Tarek S. Abdelrahman, “A Study of Potential Parallelism among Traces in Java Programs”, Journal of Science of Computer Programming, Volume 74, Issue 5-6, Pages 296-313, 2009.

Borys J. Bradel, “Extending Goal Models with a Probability Model and using Bayesian Networks”, Proc. of the Int’l Conference on Software Engineering Research and Practice, Pages 543-549, 2009.

Borys J. Bradel and Tarek S. Abdelrahman, “Automatic Trace-Based Parallelization of Java Programs”, Proc. of the Int’l Conference on Parallel Processing, Page 26, 2007.

Borys J. Bradel and Tarek S. Abdelrahman, “The Potential of Trace-Level Parallelism in Java Programs”, Proc. of the Int’l Conference on Principles and Practices of Programming in Java, Pages 167-174, 2007.

Borys J. Bradel and Tarek S. Abdelrahman, “A Characterization of Traces in Java Programs”, Proc. of the Int’l Conference on Programming Languages and Compilers, Pages 87-93, 2005.

Borys J. Bradel and Tarek S. Abdelrahman, “The Use of Traces for Inlining in Java Programs”, Proc. of the Seventeenth Int’l Workshop on Languages and Compilers for Parallel Computers, Pages 179-193, 2004.

## Awards

NSERC PGS-B Scholarship  
Mary H. Beatty Fellowship  
NSERC PGS-A Scholarship  
W.S. Wilson Medal (1st in 4th year of computer engineering)  
Bronze Medal and 14th in the 2001 ACM Programming Contest World Finals  
1st in the 2000 ACM Programming Contest Regional  
11th in the 2000 ACM Programming Contest World Finals  
2nd in the 1999 ACM Programming Contest Regional  
Golden Key National Honour Society

## Interesting School and Work Projects

Created a Tetris like game for a first year programming course.

Created a program that analyzed the voltage and current signals and identified patterns to try to identify higher level welding information while a research assistant in a welding lab.

Created a voice recognition system with a partner for a third year computer organization

course. We used assembler and C to program a Motorola 68000. The main algorithms included a fixed point based Fast Fourier Transform and a dynamic programming search for a minimum distance between two signals.

Created a parameterized processor design suite with three partners for the fourth year design project.

Created a behavioural synthesis compiler that transformed C code into VHDL for a graduate course.

Created with a partner C++ software to transform event based programs into thread based programs for a graduate course.

Investigated the use of two different approaches of proving program correctness by showing equivalence between an optimized and non optimized version of a program for a graduate course. Used ACL2.

Investigated with a partner exploring a processor design space through genetic programming for a graduate course. Used C++ and Perl.

Other projects, including a boolean function minimizer, a thin rod temperature simulator, an n-Hill cipher program, and a transmission line simulator, can be found on my website: <http://www.eecg.toronto.edu/~bradel/projects/index.html>.

## **Programming Languages**

Assembler, Awk, C, C++, Common Lisp, Java, LabView, Pascal, Perl, VBA

## **Professional Memberships**

Association for Computing Machinery