

# Nomair A. Naeem

## Personal Data

Address: David R. Cheriton School of Computer Science  
University of Waterloo  
200 University Avenue West  
Waterloo, ON N2L 3G1, Canada

E-mail: [nanaeem@uwaterloo.ca](mailto:nanaeem@uwaterloo.ca)

Web Page: <http://plg.uwaterloo.ca/~nanaeem>

## Education

- Ph.D. (2013)  
Department of Computer Science, Faculty of Mathematics, University of Waterloo, Canada  
Thesis Title: Validating Temporal Properties of Multiple Interacting Objects
- Certificate in University Teaching (2010)  
Center for Teaching Excellence, University of Waterloo, Canada
- M.Sc. (2006, CGPA 4.00):  
School of Computer Science, McGill University, Canada.  
Thesis Title: Programmer-Friendly Decompiled Java
- B.Sc. (2003, Honours, Dean's Honour List, CGPA: 3.97):  
School of Computer Science, McGill University, Canada  
Thesis Title: Exp. DB: Fast Development of Experimental Information Systems

## Teaching Experience

### Course Instructor/Sessional

- CS 241 – Foundations of Sequential Programs, University of Waterloo  
Spring 2007, Spring 2013, Fall 2013
- CS 444/644 – Compiler construction, University of Waterloo  
Winter 2010, Winter 2011
- COMP 520 – Compiler Design , McGill University  
Winter 2006
- COMP 202 – Introduction to Computing , McGill University  
Fall 2005
- Guest Lecturer for COMP 409 – Concurrent Programming, McGill University  
Fall 2003, Winter 2004

## Teaching Assistant

- CS 444/644 – Compiler Construction, University of Waterloo  
Winter 2009, 2012
- CS 241 – Foundations of Sequential Programs, University of Waterloo (13 Terms)  
2006 - 2013
- CS 133 – Introduction to Computing, University of Waterloo  
Fall 2006
- Courses: Concurrent Programming, Database Design, Programming languages and Paradigms and Introduction to Computing.  
(6 Terms) - School of Computer Science, McGill University  
2003 - 2006

## Teaching Workshops

- Teaching Squares
- Understanding the Learner
- Motivating Students
- Writing Multiple Choice Question
- Analyzing Multiple Choice Exam Questions
- Decoding the Disciplines

## Talks/Posters/Demos

- *Soot - a Java Bytecode Analysis and Transformation Framework*  
Poster at CASCON 2010 Technology Showcase, Toronto, November, 2010
- *Validating Temporal Properties of Multiple Interacting Objects*  
Poster at Cheriton Symposium, University of Waterloo, September 2010
- *Dataflow Analysis*  
Invited Talk: Computer Science Club, University of Waterloo, July 2010
- *Typestate-like Analysis of Multiple Interacting Objects*  
WatFORM formal methods group, University of Waterloo, October 2008
- *AspectJ and Tracematches*  
Guest Lecture in CS 444 – Compiler Construction, University of Waterloo, March 2007
- *Precise and Efficient Must-alias Analysis*  
Two part Programming Languages Group Seminar, University of Waterloo, January 2007
- *Decompilation at its Best*  
Sable Research Group Seminar, McGill University, November 2005

- *Dava II*  
Sable Research Group Seminar, McGill University, June 2005
- *Improving Control Flow in Dava*  
Graduate Course: Optimizing Compilers, McGill University, March 2005
- *Towards Automatic Generation of Visitors for Tree Structures*  
Graduate Course: Software Evolution, McGill University, December 2004
- *Decompiling Java Bytecode*  
Sable Research Group Seminar, McGill University, November 2004
- *Register Allocation in Compilers*  
Graduate Course: Advanced Analysis of Algorithms, McGill University, April 2004
- *Naming Local Variables while Decompiling Java Bytecode Using Machine Learning*  
Graduate Course: Machine Learning, McGill University, December 2003

## Awards and Competitions

- David R. Cheriton Graduate Scholarship, School of Computer Science, University of Waterloo, 2009-2011
- Natural Sciences and Engineering Research Council of Canada, Canada Graduate Scholarship (CGS-D), 2006 – 2008
- President’s Graduate Scholarship, University of Waterloo, 2006 –2008
- NITC Bursary, Province of Quebec, Canada, 2004
- Natural Sciences and Engineering Research Council of Canada, Canada Graduate Scholarship (CGS-M), 2004 – 2005
- Fonds québécois de la recherche sur la nature et les technologies, Bourse de doctorat en recherche (Postgraduate Scholarship), 2004 – 2005 (Declined)
- IT Fellowship, School of Computer Science, McGill University, 2004
- Faculty of Science Top-Up, McGill University, 2004
- E. R. Crawford Scholarship, School of Computer Science, McGill University, 2001
- J. R. McConnell Award, School of Computer Science, McGill University, 2001
- Excellence in Physics, University of London, England, UK, 1998
- Alan Bicker Award, University College Islamabad, Pakistan, 1997

## Refereed Journal Publications

- Eric Bodden, Laurie Hendren, Patrick Lam, Ondřej Lhoták, Nomair Naeem. Collaborative runtime verification with tracematches. Accepted to *Journal of Logic and Computation*. *This is an extended version of the RV 2007 conference paper below.*

## Refereed Conference Publications

- Nomair A. Naeem, Ondřej Lhoták. Faster Alias Set Analysis Using Summaries. *Compiler Construction (CC 2011)*, March 2011, Saarbrücken, Germany.
- Nomair Naeem, Ondřej Lhoták, Jonathan Rodriguez. Practical Extensions to the IFDS Algorithm. *Conference on Compiler Construction (CC 2010)*. March 2010, Paphos, Cyprus
- Nomair A. Naeem, Ondřej Lhoták. Efficient Alias Set Analysis using SSA Form. *International Symposium on Memory Management (ISMM 2009)*, June 2009, Dublin, Ireland.  
*A preliminary version appears as University of Waterloo SCS technical report CS-2008-22.*
- Nomair Naeem, Ondřej Lhoták. Typestate-like Analysis of Multiple Interacting Objects. *ACM SIGPLAN Conference on Object Oriented Programming Systems, Languages, and Applications (OOPSLA 2008)*. pp. 347–366, October 2008, Nashville, USA  
*A preliminary version appears as University of Waterloo SCS technical report CS-2008-04.*
- Eric Bodden, Laurie Hendren, Patrick Lam, Ondřej Lhoták, Nomair A. Naeem. Collaborative Runtime Verification with Tracematches. *Runtime Verification, 7th International Workshop (RV 2007)*, pp. 22–37, March 2007, Vancouver, Canada.
- Nomair A. Naeem, Michael Batchelder, Laurie Hendren. Metrics for Measuring the Effectiveness of Decompilers and Obfuscators. *15th IEEE International Conference on Program Comprehension (ICPC 2007)*, June 2007, Banff, Canada.  
*A preliminary version appears as Sable technical report 2006-04.*
- Nomair A. Naeem, Laurie Hendren. Programmer-Friendly Decompiled Java. *14th IEEE International Conference on Program Comprehension (ICPC 2006)*, June 2006, Athens, Greece.  
*A preliminary version appears as Sable technical report 2006-02.*
- Xueli Li, Nomair A. Naeem, Bettina Kemme. Fine-Granularity Access Control in 3-tier Laboratory Information Systems. *9th International Database Engineering and Applications Symposium (IDEAS 2005)*, July 2005, Montreal, Canada.
- Nomair A. Naeem, Stephane Raymond, Anne Poupon, Mirosław Cygler, Bettina Kemme. Exp-DB: Fast Development of Information Systems for Experiment Tracking. *15th Conference on Advanced Information Systems Engineering (CAISE 2003)*, June 2003, Klagenfurt/Velden, Austria.

## Other Publications

- Nomair A. Naeem. Validating Temporal Properties of Interacting Objects. *Doctoral Symposium, 23rd annual ACM SIGPLAN conference on Object-oriented programming, systems, languages, and applications (OOPSLA 2008)*, October 2008, Nashville, USA.

## Major Contributions to Software

- Dava: A decompiler for arbitrary Java bytecode.  
Available as part of Soot, a Java bytecode analysis and transformation framework  
<http://www.sable.mcgill.ca/soot>

## Positions Held

- June 2011 to February 2012:  
Senior Developer, R&D Group, OpenText Corporation, Waterloo, Canada.  
Manager: Tim Lehan.
  - Developing a new backend for the Domain Specific Language, OScript, using the LLVM Compiler Infrastructure.
  - Spearhead the creation of a new format to enable source-code based development of OScript, including the creation of a compiler to generate OScript Linked Libraries (OLLs)
- September 2003 to April 2006:  
Research Assistant, School of Computer Science, McGill University.  
Supervisor: Laurie Hendren
- May 2001 to December 2002:  
Design Engineer, Biotechnology Research Institute (BRI), National Research Council, Montreal, Canada.  
Supervisor: Miroslaw Cygler
- May 2005 to August 2005:  
Course Improvement Initiative, School of Computer Science, McGill University  
Supervisor: Prof. Martin Robillard
- May 2003 to August 2003:  
Course Improvement Initiative, School of Computer Science, McGill University  
Supervisor: Prof. Bettina Kemme

## Volunteer Activities

- Volunteer at hands-on lab on Finite State Machines, CEMC Seminar in Computer Science for Young Women, June 2013, University of Waterloo, Ontario, Canada
- Programming instructor for CEMC Seminar in Computer Science for Young Women  
June 2010, University of Waterloo, Ontario, Canada

## Course Projects

- *Improving Control Flow in Decompiled Java Code* – COMP 621: Optimizing Compilers, 2005
- *Renaming Local Variables in Decompiled Code* – COMP 652: Machine Learning, 2004
- *A Hnefi Robot* – COMP 424: Artificial Intelligence, 2002
- *WIG Compiler* – COMP 520: Compiler Design, 2002
- *BookYourVacations.com* – COMP 421: Database Systems, 2002