Curriculum Vitae

1 Personal Information

Name: Norbert Zeh
Nationality: German (permanent resident of Canada)
Address: 6050 University Ave, Halifax, NS, B3H 1W5
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2 Education

PhD in Computer Science, 1999–2002
School of Computer Science, Carleton University, Ottawa, Canada

Diploma (Master's) in Computer Science, 1993–1998
Fakultät für Mathematik und Informatik, Friedrich-Schiller-Universität, Jena, Germany

3 Employment

Associate Professor, 2008–current
Faculty of Computer Science, Dalhousie University, Halifax, Canada

Canada Research Chair (Tier 2), 2007–2017
Faculty of Computer Science, Dalhousie University, Halifax, Canada

Assistant Professor, 2003–2008
Faculty of Computer Science, Dalhousie University, Halifax, Canada

Visiting Research Professor, 2002
Department of Computer Science, Duke University, Durham, USA

Web Developer, 2000–2002
School of Computer Science, Carleton University, Ottawa, Canada

System Administrator, 1999–2002
School of Computer Science, Carleton University, Ottawa, Canada

4 Awards

Srini Teaching Award for Teaching Excellence, 2005
Faculty of Computer Science, Dalhousie University, Halifax, Canada

> Presented by the Computer Science Society to the Professor who has demonstrated teaching excellence as voted upon by the Student Body.

Senate Medal, 2002
Carleton University, Ottawa, Canada

Presented by the Senate of Carleton University in recognition of outstanding graduate work during my PhD.

5 Funding

Engineering of I/O-efficient graph algorithms, $101,833, 2010
Leadership Grant from the Canadian Foundation for Innovation tied to my appointment as Canada Research Chair

Engineering of I/O-efficient graph algorithms, $101,833, 2010
Matching funds from NSRIT

Optimal data structures for organization and retrieval of spatial data, $139,875/year, 2007–2010
NSERC Strategic Grant, 3 co-applicants

Algorithms for memory hierarchies, $29,000/year, 2007–2012
NSERC Discovery Grant

Graph algorithms for memory hierarchies, $25,700/year, 2004–2007
NSERC Discovery Grant

Scientific visualization through data mining of electronic commerce and health informatics large scale data sets, $1,878,000, 2003
New Opportunities Grant from the Canadian Foundation for Innovation, (7 co-applicants)

6 Scientific Contributions

6.1 Under Review

[WBZ11] Chris Whidden, Robert G. Beiko, and Norbert Zeh. Fixed-parameter and approximation algorithms for maximum agreement forests. *SIAM Journal on Computing*, submitted 2011.

[ACZ11a] Deepak Ajwani, Adan Cosgaya-Lozano, and Norbert Zeh. A topological sorting algorithm for large graphs. *ACM Journal of Experimental Algorithmics*, submitted 2011. (ALENEX 2011 special issue.)

[AZ11a] Peyman Afshani and Norbert Zeh. Sorted geometric queries are hard. *ACM Symposium on Computational Geometry*, submitted 2011.

[BRZ11] Building a scalable spatial OLAP system. *International Conference on Extending Database Technology*, submitted 2011.

6.2 Journal Publications

[MZ11] Ulrich Meyer and Norbert Zeh. I/O-efficient shortest path algorithms for undirected graphs with random and bounded edge lengths. *ACM Transactions on Algorithms*, accepted November 2011.

[MSZ11] Anil Maheshwari, Michiel Smid, and Norbert Zeh. Low-interference networks in metric spaces of bounded doubling dimension. *Information Processing Letters* 111(23–24):1120–1123, 2011.

[AHZ11] Peyman Afshani, Chris Hamilton, and Norbert Zeh. Cache-oblivious range reporting with optimal queries requires superlinear space. *Discrete and Computational Geometry* 45(4):824–850, 2011. (SoCG 2009 special issue.)

[HBC+11] Glenn Hickey, Mathieu Blanchette, Paz Carmi, Anil Maheshwari, and Norbert Zeh. An approximation algorithm for the Noah's Ark problem with random feature loss. *IEEE/ACM Transactions on Computational Biology and Bioinformatics* 8(2):551–556, 2011.

[AHZ10] Peyman Afshani, Chris Hamilton, and Norbert Zeh. A general approach for cache-oblivious range reporting and approximate range counting. *Computational Geometry: Theory and Applications* 43(8):700–712, 2010. (SoCG 2009 special issue.)

[BCC+09] Prosenjit Bose, Paz Carmi, Mathieu Couture, Anil Maheshwari, Michiel Smid, and Norbert Zeh. Geometric spanners with small chromatic number. *Computational Geometry: Theory and Applications* 42(2):134–146, 2009.

[MZ09] Anil Maheshwari and Norbert Zeh. I/O-efficient algorithms for graphs of bounded treewidth. *Algorithmica*, 54(3):413–469, 2009.

[MZ08] Anil Maheshwari and Norbert Zeh. I/O-efficient planar separators. *SIAM Journal on Computing* 38(3):767–801, 2008.

[MSZ08] Anil Maheshwari, Michiel Smid, and Norbert Zeh. I/O-efficient algorithms for computing planar geometric spanners. *Computational Geometry: Theory and Applications* 40(3):252–271, 2008.

[BRZ07] Oliver Baltzer, Andrew Rau-Chaplin, and Norbert Zeh. Storage and indexing of relational OLAP views with mixed categorical and continuous dimensions. *Journal of Digital Information Management* 5(4):180–190, 2007.

[NZ06] Richard Nowakowski and Norbert Zeh. Boundary-optimal triangulation flooding. *International Journal on Computational Geometry and Applications* 16(2–3):271–290, 2006. (ISAAC 2004 special issue.)

[GLMZ06] Sathish Govindarajan, Tamás Lukovszki, Anil Maheshwari, and Norbert Zeh. I/O-efficient well-separated pair decomposition and its applications. *Algorithmica* 45(4):585–614, 2006.

[MZ04] Anil Maheshwari and Norbert Zeh. I/O-efficient algorithms for outerplanar graphs. *Journal of Graph Algorithms and Applications* 8(1):47–87, 2004.

[BMN+04] Prosenjit Bose, Anil Maheshwari, Giri Narasimhan, Michiel Smid, and Norbert Zeh. Approximating geometric bottleneck shortest paths. *Computational Geometry: Theory and Applications* 29:233–249, 2004.

[AMTZ03] Lars Arge, Ulrich Meyer, Laura Toma, and Norbert Zeh. On external-memory planar depth first search. *Journal of Graph Algorithms and Applications* 7(2):105–129, 2003.

[HMZ03] David Hutchinson, Anil Maheshwari, and Norbert Zeh. An external memory data structure for shortest path queries. *Discrete Applied Mathematics* 126(1):55–82, 2003. (COCOON 1999 special issue.)

6.3 Refereed Conference Publications

[ASZ11] Deepak Ajwani, Nodari Sitchinava, and Norbert Zeh. I/O-optimal distribution sweeping on private-cache chip multiprocessors. To appear in *Proceedings of the 25th IEEE International Parallel and Distributed Processing Symposium*, 2011.

[ABZ11] Peyman Afshani, Gerth Stølting Brodal, and Norbert Zeh. Ordered and unordered top-K range reporting in large data sets. In *Proceedings of the 22nd ACM-SIAM Symposium on Discrete Algorithms*, pages 390–400, 2011.

[AZ11b] Peyman Afshani and Norbert Zeh. Improved space bounds for cache-oblivious range reporting. In *Proceedings of the 22nd ACM-SIAM Symposium on Discrete Algorithms*, page 1745–1758, 2011.

[ACZ11b] Deepak Ajwani, Adan Cosgaya-Lozano, and Norbert Zeh. Engineering an topological sorting algorithm for massive graphs. In *Proceedings of the 13th Workshop on Algorithm Engineering and Experiments*, pages 139–150, 2011.

[ASZ10] Deepak Ajwani, Nodari Sitchinava, and Norbert Zeh. Geometric algorithms for private-cache chip multiprocessors. In *Proceedings of the 18th European Symposium on Algorithms (2)*, pages 75–86, 2010.

[WBZ10] Chris Whidden, Robert G. Beiko, and Norbert Zeh. Fast FPT algorithms for computing rooted agreement forests: Theory and experiments. In *Proceedings of the 9th International Symposium on Experimental Algorithms*, pages 141–153, 2010.

[ARZ10] Lars Arge, Morten Revsbæk, and Norbert Zeh. I/O-efficient computation of waterflow across a terrain. In *Proceedings of the 26th ACM Symposium on Computational Geometry*, pages 403–412, 2010.

[DHMZ09] Craig Dillabaugh, Meng He, Anil Maheshwari, and Norbert Zeh. I/O and space-efficient path traversal in planar graphs. In *Proceedings of the 20th International Conference on Algorithms and Computation*, pages 1175–1184, 2009.

[KLZ+09] Vlado Kešelj, Haibin Liu, Norbert Zeh, Christian Blouin, and Chris Whidden. Finding optimal parameters for edit distance based sequence classification is NP-hard. In *Proceedings of the ACM SIGKDD Workshop on Statistical and Relational Learning in Bioinformatics*, pages 17–21, 2009.

[WZ09] Chris Whidden and Norbert Zeh. A unifying view on approximation and FPT of agreement forests. In *Proceedings of 9th International Workshop on Algorithms in Bioinformatics*, pages 390–402, 2009.

[AHZ09a] Peyman Afshani, Chris Hamilton, and Norbert Zeh. Cache-oblivious range reporting with optimal queries requires superlinear space. In *Proceedings of the 25th ACM Symposium on Computational Geometry*, pages 277–286, 2009.

[AHZ09b] Peyman Afshani, Chris Hamilton, and Norbert Zeh. A general approach for cache-oblivious range reporting and approximate range counting. In *Proceedings of the 25th ACM Symposium on Computational Geometry*, pages 287–295, 2009.

[CZ09] Adan Cosgaya and Norbert Zeh. A faster heuristic for strong connectivity of massive graphs. In *Proceedings of the 8th International Symposium on Experimental Algorithms*, pages 113–124, 2009.

[AMZ08] Lars Arge, Thomas Mølhave, and Norbert Zeh. Cache-oblivious red-blue line segment intersection. In *Proceedings of the 16th European Symposium on Algorithms*, pages 88–99, 2008.

[CHMZ08] Glenn Hickey, Paz Carmi, Anil Maheshwari, and Norbert Zeh. NAPX: A polynomial-time approximation scheme for Noah's Ark problem. In *Proceedings of the 8th International Workshop on Algorithms in Bioinformatics*, pages 76–86, 2008.

[BCC+07] Prosenjit Bose, Paz Carmi, Mathieu Couture, Anil Maheshwari, Michiel Smid, and Norbert Zeh. Geometric spanners with small chromatic number. In *Proceedings of the 5th Workshop on Approximation and Online Algorithms*, pages 75–88, 2007.

[DRZ07] Jean-Paul Deveaux, Andrew Rau-Chaplin, and Norbert Zeh. Adaptive tuple differential coding. In *Proceedings of the 18th International Conference on Database and Expert Systems Applications*, pages 109–119, 2007.

[CRZ07] Adan Cosgaya-Lozano, Andrew Rau-Chaplin, and Norbert Zeh. Parallel computation of skyline queries. In *Proceedings of the 21st International Symposium on High Performance Computing Systems and Applications*, 2007.

[ALZ07] Luca Allulli, Peter Lichodzijewski, and Norbert Zeh. A faster cache-oblivious shortest-path algorithm for undirected graphs with bounded edge lengths. In *Proceedings of the 18th ACM-SIAM Symposium on Discrete Algorithms*, pages 910–919, 2007.

[SSZ06] Allan Scott, Ulrike Stege, and Norbert Zeh. Politician's Firefighting. In *Proceedings of the 17th International Symposium on Algorithms and Computation*, pages 608–617, 2006.

[MZ06] Ulrich Meyer and Norbert Zeh. I/O-efficient undirected shortest paths with unbounded edge lengths. In *Proceedings of the 14th European Symposium on Algorithms*, pages 540–551, 2006.

[AZ06] Lars Arge and Norbert Zeh. Simple and semi-dynamic structures for cache-oblivious planar orthogonal range searching. In *Proceedings of the 22nd ACM Symposium on Computational Geometry*, pages 158–166, 2006.

[ADHZ06] Lars Arge, Andrew Danner, Herman Haverkort, and Norbert Zeh. I/O-efficient hierarchical watershed decomposition of grid terrain models. In *Progress in Spatial Data Handling: 12th International Symposium on Spatial Data Handling*, pages 825–844, 2006.

[JZ05] Hema Jampala and Norbert Zeh. Cache-oblivious planar shortest paths. In *Proceedings of the 32nd International Colloquium on Automata, Languages and Programming*, pages 563–575, 2005.

[NZ04] Richard Nowakowski and Norbert Zeh. Boundary-optimal triangulation flooding. In *Proceedings of the 15th International Symposium on Algorithms and Computation*, pages 717–728, 2004.

[Zeh04] Norbert Zeh. Connectivity of graphs under edge flips. In *Proceedings of the 9th Scandinavian Workshop on Algorithm Theory*, pages 161–173, 2004.

[BFMZ04] Gerth S. Brodal, Rolf Fagerberg, Ulrich Meyer, and Norbert Zeh. Cache-oblivious data structures and algorithms for undirected breadth-first search and shortest paths. In *Proceedings of the 9th Scandinavian Workshop on Algorithm Theory*, pages 480–492, 2004.

[MZ03a] Ulrich Meyer and Norbert Zeh. I/O-efficient undirected shortest paths. In *Proceedings of the 11th European Symposium on Algorithms*, pages 434–445, 2003.

[AZ03] Lars Arge and Norbert Zeh. I/O-efficient strong connectivity and depth-first search for directed planar graphs. In *Proceedings of the 44th IEEE Symposium on Foundations of Computer Science*, pages 261–270, 2003.

[ATZ03] Lars Arge, Laura Toma, and Norbert Zeh. I/O-efficient topological sorting of planar DAGs. In *Proceedings of the 15th ACM Symposium on Parallelism in Algorithms and Architectures*, pages 85–93, 2003.

[BMN+03] Prosenjit Bose, Anil Maheshwari, Giri Narasimhan, Michiel Smid, and Norbert Zeh. Approximating geometric bottleneck shortest paths. In *Proceedings of the 20th International Symposium on Theoretical Aspects of Computer Science*, pages 38–49, 2003.

[MZ02] Anil Maheshwari and Norbert Zeh. I/O-optimal algorithms for planar graphs using separators. In *Proceedings of the 13th ACM-SIAM Symposium on Discrete Algorithms*, pages 372–381, 2002.

[LMZ01] Tamás Lukovszki, Anil Maheshwari, and Norbert Zeh. I/O-efficient batched range counting and its applications to proximity problems. In *Proceedings of the 21th Conference on Foundations of Software Technology and Theoretical Computer Science*, pages 244–255, 2001.

[AMTZ01] Lars Arge, Ulrich Meyer, Laura Toma, and Norbert Zeh. On external-memory planar depth first search. In *Proceedings of the 7th International Workshop on Algorithms and Data Structures*, pages 471–482, 2001.

[ASZ01] Anil Maheshwari, Michiel Smid, and Norbert Zeh. I/O-efficient shortest-path queries in geometric spanners. In *Proceedings of the 7th International Workshop on Algorithms and Data Structures*, pages 287–299, 2001.

[ZS01] Norbert Zeh and Nicola Santoro. On finding minimum deadly sets for directed networks. In *Proceedings of the 8th International Colloquium on Structural Information and Communication Complexity*, pages 351–365, 2001.

[MZ01] Anil Maheshwari and Norbert Zeh. I/O-efficient algorithms for bounded treewidth graphs. In *Proceedings of the 12th ACM-SIAM Symposium on Discrete Algorithms*, pages 89–90, 2001.

[GLMZ00] Sathish Govindarajan, Tamás Lukovszki, Anil Maheshwari, and Norbert Zeh. I/O-efficient well-separated pair decomposition and its applications. In *Proceedings of the 8th European Symposium on Algorithms*, pages 220–231, 2000.

[MZ99] Anil Maheshwari and Norbert Zeh. External memory algorithms for outerplanar graphs. In *Proceedings of the 10th International Symposium on Algorithms and Computation*, pages 307–316, 1999.

[HMZ99] David Hutchinson, Anil Maheshwari, and Norbert Zeh. An external memory data structure for shortest path queries. In *Proceedings of the 5th Annual Combinatorics and Computing Conference*, pages 51–60, 1999.

6.4 Non-Refereed Conference Publications

[BCC+09] Prosenjit Bose, Jean Cardinal, Sebastien Collette, Erik D. Demaine, Belen Palop, Perouz Taslakian, and Norbert Zeh. Relaxed Gabriel Graphs. In *Proceedings of the 21st Canadian Conference on Computational Geometry*, pages 169–172, 2009.

[MVZ02] Anil Maheshwari, Jan Vahrenhold, and Norbert Zeh. On reverse nearest neighbor queries. In *Proceedings of the 14th Canadian Conference on Computational Geometry*, pages 128–132, 2002.

6.5 Book Chapters

[AZ07] Lars Arge and Norbert Zeh. I/O-efficient algorithms. In *Handbook of Algorithms and Theory of Computation*, 2nd edition, CRC Press, 2009.

[Zeh08] Norbert Zeh. I/O-model. In *Encyclopedia of Algorithms*. Springer-Verlag, 2008.

[MZ03b] Anil Maheshwari and Norbert Zeh. A survey of techniques for designing I/O-efficient algorithms. In Ulrich Meyer, Peter Sanders, and Jop Sibeyn (eds.), *Algorithms for Memory Hierarchies*, Lecture Notes in Computer Science, pages 36–61. Springer-Verlag, 2003.

[TZ03] Laura Toma and Norbert Zeh. I/O-efficient algorithms for sparse graphs. In Ulrich Meyer, Peter Sanders, and Jop Sibeyn (eds.), *Algorithms for Memory Hierarchies*, Lecture Notes in Computer Science, pages 85–109. Springer-Verlag, 2003.

6.6 Talks

Improved space bounds for cache-oblivious range reporting, 2010
University of Frankfurt, Germany

Improved space bounds for cache-oblivious range reporting, 2010
University of New Brunswick, Fredericton, Canada

Faster FPT algorithms for computing rooted agreement forests: Theory and experiments, 2010
University of Frankfurt, Germany

Dealing with massive graphs: Algorithms, techniques and challenges, 2010
University of Aarhus, Denmark

Cache-oblivious range reporting with optimal queries requires super-linear space, 2009
MADALGO Center for Massive Data Algorithmics, University of Aarhus, Denmark

New results on (cache-oblivious) range searching, 2009
Carleton University, Ottawa, Canada

Cache-oblivious graph algorithms, 2008
MADALGO Summer School on Cache-Oblivious Algorithms, Aarhus, Denmark, 4 lectures

Cache-oblivious red-blue line segment intersection, 2008
University of Frankfurt, Germany

Cache-oblivious red-blue line segment intersection, 2008
Dagstuhl Research Centre, Germany

A faster cache-oblivious shortest-path algorithm for undirected graphs with bounded edge lengths, 2008
MADALGO Center for Massive Data Algorithmics, University of Aarhus, Denmark

Connectivity of graphs under edge flips, 2007
Carleton University, Ottawa, Canada

Cache-oblivious undirected shortest paths, 2007
University of Waterloo, Waterloo, Canada

Cache-oblivious planar range searching simplified, 2006
Max-Planck-Institut für Informatik, Saarbrücken, Germany

Cache-oblivious planar range searching simplified, 2006
University of Aarhus, Aarhus, Denmark

Shortest-path algorithms for massive graphs, 2005
University of Victoria, Victoria, Canada

Shortest-path algorithms for massive graphs, 2005
University of New Brunswick, Fredericton, Canada

I/O-efficient graph algorithms: Techniques and current directions, 2004
Annual Colloquium of the German Research Foundation (DFG) Focus Group "Algorithmics for Massive Networks", Karlsruhe, Germany

I/O-efficient algorithms for planar graphs, 2004
Max-Planck-Institut für Informatik, Saarbrücken, Germany

I/O-efficient algorithms for planar graphs, 2004
Duke University, Durham, NC, USA

I/O-efficient algorithms for directed planar graphs, 2003
Max-Planck-Institut für Infomatik, Saarbrücken, Germany

I/O-efficient graph algorithms, 2002
EEF Summer School on Massive Data Sets, Aarhus, Denmark, 6 lectures

I/O-efficient algorithms for graphs of bounded treewidth, 2001
Duke University, Durham, NC, USA

I/O-efficient algorithms, 2000
Friedrich-Schiller-Universität, Jena, Germany

7 Professional Service

7.1 Editorship

- Guest editor for special issue of *Computational Geometry: Theory and Applications* dedicated to outstanding papers accepted to WADS 2007.

7.2 Program Committees

- *Workshop on Algorithm Engineering and Experiments* (ALENEX 2012), PC member.
- *3rd Workshop on Massive Data Sets* (MASSIVE 2011), PC member.
- *10th International Symposium on Experimental Algorithms*, (SEA 2011), PC member.
- *18th European Symposium on Algorithms* (ESA 2010), PC member.
- *2nd Workshop on Massive Data Sets* (MASSIVE 2010), PC chair.
- *22nd Canadian Conference on Computational Geometry* (CCCG 2010), PC member.
- *9th Latin American Theoretical Computer Science Symposium* (LATIN 2010), PC member.
- *SoCG 2009 Satellite Workshop on Massive Data Sets* (MASSIVE 2009), PC member.
- *20th Canadian Conference on Computational Geometry* (CCCG 2008), PC member.
- *4th International Conference on Algorithmic Aspects in Information and Management* (AAIM 2008), PC member.
- *Workshop on Algorithm Engineering and Experiments* (ALENEX 2008), PC member.
- *19th Canadian Conference on Computational Geometry* (CCCG 2007), PC member.
- *10th International Workshop on Algorithms and Data Structures* (WADS 2007), PC co-chair.
- *6th International Workshop on Experimental Algorithms* (WEA 2007), PC member.
- *34th International Colloquium on Automata, Languages and Programming* (ICALP 2007), PC member.
- *9th International Workshop on Algorithms and Data Structures* (WADS 2005), PC member.

7.3 Reviewing

7.3.1 Journals

- *SIAM Journal on Computing*
- *Algorithmica*
- *Journal of Discrete Algorithms*
- *Computational Geometry: Theory and Applications*
- *Journal of Experimental Algorithmics*
- *Journal on Graph Algorithms and Applications*
- *Information and Computation*
- *Software: Practice and Experience*
- *Acta Informatica*
- *Journal of Mathematical Biology*

- *International Journal of Foundations of Computer Science*
- *ACM Transactions on Database Systems*
- *IEEE Transactions on Knowledge and Data Engineering*
- *BMC Bioinformatics*

7.3.2 Conferences

- *23rd ACM-SIAM Symposium on Discrete Algorithms* (SODA 2012)
- *29th International Symposium on Theoretical Aspects of Computer Science* (STACS 2012)
- *19th European Symposium on Algorithms* (ESA 2011)
- *52nd IEEE Symposium on Fuondations of Computer Science* (FOCS 2011)
- *30th Symposium on Principles of Database Systems* (PODS 2011)
- *43rd ACM Symposium on Theory of Computing* (STOC 2011)
- *35th International Symposium on Mathematical Foundations of Computer Science* (MFCS 2010)
- *22nd ACM Symposium on Parallelism in Algorithms and Architectures* (SPAA 2010)
- *5th International Conference on Fun with Algorithms* (FUN 2010)
- *11th Scandinavian Workshop on Algorithm Theory* (SWAT 2008)
- *19th ACM-SIAM Symposium on Discrete Algorithms* (SODA 2008)
- *25th International Symposium on Theoretical Aspects of Computer Science* (STACS 2008)
- *23rd International Conference on Data Engineering* (ICDE 2007)
- *18th ACM-SIAM Symposium on Discrete Algorithms* (SODA 2007)
- *19th ACM Symposium on Parallelism in Algorithms and Architectures* (SPAA 2007)
- *10th International Database Engineering and Applications Symposium* (IDEAS 2006)
- *14th European Symposium on Algorithms* (ESA 2006)
- *5th International Workshop on Experimental Algorithms* (WEA 2006)
- *32nd International Colloquium on Automata, Languages and Programming* (ICALP 2005)
- *22nd Symposium on Theoretical Aspects of Computer Science* (STACS 2005)
- *37th ACM Symposium on Theory of Computing* (STOC 2005)
- *15th ACM-SIAM Symposium on Discrete Algorithms* (SODA 2004)
- *12th European Symposium on Algorithms* (ESA 2004)
- *8th International Workshop on Algorithms and Data Structures* (WADS 2003)

7.3.3 Grants

- *NSERC Discovery Grants Competition*, 2012.
- *U.S. Israel Binational Science Foundation*, 2011.
- *Netherlands Organization for Scientific Research* (NWO), 2005, 2011.

7.4 Conference Organization

- *10th International Workshop on Algorithms and Data Structures* (WADS 2007), Halifax, Canada. Local arrangements chair.

8 Teaching and Student Supervision

8.1 Teaching

CSCI 3110: Design and Analysis of Algorithms I (Undergraduate course)
Faculty of Computer Science, Dalhousie University, Halifax, Canada
Fall 2003, 2004, 2005, 2006, 2007; Summer 2004, 2005, 2006, 2007, 2008

> This course covers techniques for the design and analysis of algorithms and data structures. Topics include asymptotic analysis, divide and conquer, greedy algorithms, dynamic programming, randomization, graph algorithms, and an introduction to NP-completeness.

CSCI 3136: Principles of Programming Languages (Undergraduate course)
Faculty of Computer Science, Dalhousie University, Halifax, Canada
Winter 2012

> This course presents a comparative study of programming language features, an introduction to programming language desing and implementation, and an introduction to formal language theory.

CSCI 6104: Algorithms and Data Structures for Massive Datasets (Graduate course)
Faculty of Computer Science, Dalhousie University, Halifax, Canada
Summer 2004, 2005, 2006, 2007, 2008; Fall 2010, 2011

> This course covers algorithms and data structures designed to alleviate the I/O-bottleneck that arises when dealing with massive data sets. The focus is on general techniques. These techniques are illustrated using applications to fundamental problems, including problems from computational geometry and graph theory.

8.2 Student Supervision

Name	Degree	Thesis title/topic	Supervised
Reza Dorrigiv	Postdoc	Advanced analysis of algorithms	2011–current
Peyman Afshani	Postdoc	Data structures	2010–current
Chris Whidden*	PhD	New Algorithmic Techniques for Analyzing Phylogenies	2009–current
Adan Cosgaya*	PhD	Engineering I/O-efficient algorithms for directed graphs	2007–2011
Oliver Baltzer*	PhD	Spatial OLAP	2007–2011
Chris Hamilton	PhD	Cache-oblivious geometric search problems	2006–2011
Kathryn Duffy*	PhD	Algorithms for protein clustering	2007–09
Chris Whidden	Masters	Approximation and Fixed-Parameter Algorithms for Computing Distances Between Phylogenies	2008–09
Jeremy Moses	Masters	Experimental evaluation of cache-oblivious range search structures	2006–10
Haixia Tang*	Masters	A suffix array based N-gram extraction algorithm	2005
Muthukumaran Chakkaravarti	Masters	Engineering a cache-oblivious shortest-path algorithm	2004–07
Hema Jampala	Masters	Cache-oblivious planar shortest paths and separators	2004–05
Jean-Paul Deveaux*	Masters	Adaptive tuple differential coding in statistical data sets	2004
Chris Whidden	BCS Hons	Fixed-parameter tractability of sorting by transpositions	2007
Patrick Nicholson	BCS Hons	Extracting C/NC-values from massive text corpora via frequency filtering	2006–07
Tomas Hofmann	Honours	NP-hardness of sorting by transpositions	2007
Craig Gidney	NSERC USRA	Cache-oblivious planar separators	2007
Ian Hopkins*	Honours	Algorithmic aspects of C/NC-value computation	2005–06
Joel Muzzerall	Honours	Towards a middle-game engine for dots-and-boxes	2004

* co-supervised

9 Administration

9.1 Committee Service

Name	Level	Position	Duration
Search committee	Faculty	Member	2003–2004, 2011
Graduate committee	Faculty	Member	2003–2006, 2010–current
Undergraduate committee	Faculty	Member	2004–2009
Resource committee	Faculty	Member	2006–2008
Tenure and promotion committee	Faculty	Chair	2010–2011

9.2 Other Administrative Duties

Member of Year-1 Task Force (2005)
Faculty of Computer Science, Dalhousie University, Halifax, Canada

> This task force had the goal to restructure our introductory computer science course (CSCI 1100) to ensure that it shows the full breadth of computer science to incoming students. Our current introductory course focuses mostly on programming. This task force dissolved after about a year of time-consuming work without having produced any results.

Chair of Graduate Curriculum Subcommittee (2005/06)
Faculty of Computer Science, Dalhousie University, Halifax, Canada

> The initial task of this subcommittee was the re-structuring of the MACS program to better meet the needs of professional Master's students and of the Faculty. The goals quickly became more ambitious, aiming to define a proper structure for a graduate curriculum. These goals have not been reached to date. I stepped down as chair in 2006, as this work had consumed a major share of my time for about a year and I could no longer afford to neglect my research.

FCS Liaison with Facilities Management for New Academic Building on Coburg Street (2008)
Faculty of Computer Science, Dalhousie University, Halifax, Canada

Honors Advisor (2008–2009)
Faculty of Computer Science, Dalhousie University, Halifax, Canada

Faculty of Graduate Studies Search Committee (2011)
Dalhousie University, Halifax, Canada

> This committe was struck to carry out the search to fill the post of Dean of Graduate Studies.