Eric Charles Roy HEHNER
Curriculum Vitae
2023 July 24

Degrees	Ph.D.	U. of Toronto (computer science) 1974
	M.Sc.	U. of Toronto (computer science) 1970
	B.Sc. Hons.	Carleton U. (mathematics and physics) 1969

Positions

Professor Emeritus, U. of Toronto, 2012-now
Professor (with tenure), U. of Toronto, 1983-2012
Visiting Professor, U. Southampton, 1998 February-May
Visiting Professor, U. British Columbia, 1995 January-April
Visiting Professor, Simon Fraser U., 1995 January-April
Professeur invité, Université de Grenoble, 1987 September-1988 June
Visiting Researcher, U. of Texas, Austin, 1987 January-April
Visiting Fellow, Wolfson College, Oxford, 1981 April-July
Visiting Scientist, Xerox Research Center, Palo Alto, 1980 September-December
Associate Professor (with tenure), U. of Toronto, 1979-1983
Assistant Professor, U. of Toronto, 1974-1979
Lecturer, U. of Guelph, 1973
Teaching Assistant, U. of Toronto, 1969-1973
Research Assistant, Defence Research Establishment Pacific
    Acoustics, 1969 May-August
    Electro-Magnetics, 1968 May-August

Awards

Bell Chair in Software Engineering, U. of Toronto, 2002-2007
First annual CSSU teaching award, 1987
NRC Postgraduate Scholarships 1969-1974
Woodrow Wilson Fellowship 1969
University Medal in Science (highest standing in graduating class,
    Faculty of Science), Carleton U., 1969

Affiliations

IFIP Working Group 2.3 on Programming Methodology, member 1977-2012,
    secretary, 1977-2002
IFIP Working Group 2.1 on Algorithmic Languages and Calculi, member 1998-2012
Association for Computing Machinery, 1975-1986
Institute for Electronic and Electrical Engineers, Computer group, 1975-1985
Computer Systems Research Group/Institute, U. of Toronto, 1974-1991, 1997-2002

Research Interests

formal methods of software design
unified algebra
high-level circuit design

Publications

Scholarly Books (authored)	2
Chapters in Books	19
Papers in Refereed Journals	30
Papers in Refereed Conferences	25
Invited Conference Contributions	9
Theses	3
Other Publications	49
Invited Lectures	175

(Books)

E.C.R.Hehner: *a Practical Theory of Programming*, first edition 244p. Springer, New York, 1993; current edition online. Chinese translation Science Press, Beijing 2010

E.C.R.Hehner: *the Logic of Programming*. Prentice-Hall International Series in Computer Science (ed. C.A.R.Hoare), London, 361p., 1984

(Chapters)

E.C.R.Hehner: "What is a Procedure?", *Present And Ulterior Software Engineering*, B.Meyer (ed.), Springer, 2017

E.C.R.Hehner: "Specified Blocks", LNCS 4171 p384-391, J.Woodcock, B.Meyer (eds.), Springer, 2008

A.Tafliovich, E.C.R.Hehner: "Quantum Predicative Programming", LNCS 4014 p.433-454, T.Uustalu (ed.), Springer, 2006

E.C.R.Hehner: "Retrospective and Prospective for Unifying Theories of Programming", symposium on Unifying Theories of Programming", LNCS 4010 p.1-17, S.E.Dunne, W.J.Stoddart (eds.), Springer, 2006

E.C.R.Hehner: "Probabilistic Predicative Programming", LNCS 3125 p.169-185, D.M.Kozen (ed.), Springer, 2004

E.C.R.Hehner, T.S.Norvell: "High-Level Circuit Design", Chapter 18 in *Programming Methodology*, Morgan, McIver (eds.), p.381-412, Springer, 2003

E.C.R.Hehner, I.T.Kassios: "Theories, Implementations, and Transformations", LNCS 2272 p.1, D.Bert, J.P.Bowen, M.C.Henson, K.Robinson (eds.), Springer, 2002

E.C.R.Hehner, T.S.Norvell: "program2circuit", *Advances in Systems Science: Measurement, Circuits and Control*, p.346-353, WSES Electrical and Computer Engineering Series, 2001

E.C.R.Hehner: "Formalism and the Variable", in *Millennial Perspectives in Computer Science*, Davies, Roscoe, Woodcock (eds.), p.147-156, Palgrave, 2000

E.C.R.Hehner, A.M.Gravell: "Refinement Semantics and Loop Rules", in *Formal Methods II*, LNCS 1709 p.1497-1510, J.M.Wing, J.Woodcock, J.Davies (eds.), Springer, 1999

R.F.Paige, E.C.R.Hehner: "Bunches for Object-Oriented, Concurrent, and Real-Time Specification", in *Formal Methods I*, LNCS 1708 p.530-550, J.M.Wing, J.Woodcock, J.Davies (eds.), Springer, 1999

E.C.R.Hehner: "Boolean Formalism and Explanations", in *Algebraic Methodology and Software Technology*, LNCS 1101 p.351-374, M.Wirsing and M. Nivat (eds.), Springer, 1996

E.C.R.Hehner: "Abstractions of Time", chapter 12 in *a Classical Mind*, edited by A.W. Roscoe, Prentice-Hall International Series in Computer Science, London, p.191-210, 1994

T.S.Norvell, E.C.R.Hehner: "Logical Specifications for Functional Programs", chapter in Bird, Morgan Woodcock (eds.): *Mathematics of Program Construction*, LNCS 669 p.269-290, Springer, Berlin, 1993

E.C.R.Hehner: "What's wrong with formal programming methods?", chapter in *Advances in Computing and Information*, LNCS 497, Springer, Berlin, p.2-23, 1991

E.C.R.Hehner: "Beautifying Gödel", chapter 18 in Feijen, vanGasteren, Gries, Misra (ed.): *Beauty is our Business*, Springer silver series, New York, p.163-172, 1990

E.C.R.Hehner: "Termination is Timing", chapter in van de Snepscheut (ed.): *Mathematics of Program Construction*, LNCS 375, Springer, Berlin, p.36-47, 1989

E.C.R.Hehner: "Programming Based on Logic and Logic Based on Programming", 71p., four chapters in Broy (ed.): *The Logic of Programming and Calculi of Discrete Design*, NATO Advanced Studies Institute Series, Springer, Heidelberg, 1986

C.Lengauer, E.C.R.Hehner: "a Methodology for Programming with Concurrency", in LNCS 111, W.Handler (ed.), Springer, p.259-270, 1981

(Refereed Journal Papers)

B.Dongol, E.C.R.Hehner et al.: On Formal Methods Thinking in Computer Science Education, *Formal Aspects of Computing*, submitted 2023 July 23

E.C.R.Hehner: "Epimenides, Gödel, Turing: an Eternal Gölden Twist", *Springer Nature Computer Science* v.1 p.308, https://doi.org/10.1007/s42979-020-00318-5, 2020 September

E.C.R.Hehner: "a Theory of Lazy Imperative Timing", *Electronic Proceedings in Theoretical Computer Science* v.282 p.1-9, 2018 October

E.C.R.Hehner: "Scientific Publication", *University Affairs Magazine*, 2014 June

E.C.R.Hehner: "the Computability Hierarchy", *Advances in Computer Science and Engineering*, v.10 n.2 p.123-131, 2013

E.C.R.Hehner: "Problems with the Halting Problem", *Advances in Computer Science and Engineering*, v.10 n.1 p.31-60, 2013

E.C.R.Hehner: "a Probability Perspective", *Formal Aspects of Computing*, v.23 n.4 p.391-419 and DOI 10.1007/s00165-010-0157-0, 2011

A.Tafliovich, E.C.R.Hehner: "Programming Telepathy: Implementing Quantum Non-locality Games", *Electronic Notes in Theoretical Computer Science*, 2009

E.C.R.Hehner: "Unified Algebra", *International Journal of Mathematical Sciences* v.1 n.1 p.20-37, 2007

E.C.R.Hehner: "from Boolean Algebra to Unified Algebra", *Journal of Computers in Mathematics and Science Teaching* v.19 n.1 p.59-86, 2000; revised for *the Mathematical Intelligencer* v.26 n.2 p.3-19, 2004

E.C.R.Hehner: "Variables and Scopes Considered Formally", *Information Processing Letters* v.79 p.33-38, 2001

E.C.R. Hehner: "Specifications, Programs, and Total Correctness", *Science of Computer Programming* v.34 p.191-205, 1999

E.C.R.Hehner: "Formalization of Time and Space", *Formal Aspects of Computing*, v.10 p.290-306, 1998

E.C.R.Hehner: "a Practical Theory of Programming", *Science of Computer Programming*, v.14 n.2&3 p.133-158, 1990 (invited)

E.C.R.Hehner: "Real-Time Programming", *Information Processing Letters*, v.30 p.51-56, 1989 January

E.C.R.Hehner, A.J.Malton: "Termination Conventions and Comparative Semantics", *Acta Informatica*, v.25 n.1 p.1-14, 1988 January

E.C.R.Hehner, L.E.Gupta, A.J.Malton: "Predicative Methodology", *Acta Informatica*, v.23 n.5 p.487-505, 1986

E.C.R.Hehner: "Predicative Programming, Part I", *Communications of the ACM*, v.27 n.2 p.134-143, 1984 February

E.C.R.Hehner: "Predicative Programming, Part II", *Communications of the ACM*, v.27 n.2 p.144-151, 1984 February

E.C.R.Hehner, B.A.Silverberg: "Programming with Grammars: an Exercise in Methodology-Directed Language Design", *The Computer Journal*, v.26, n.3, p.277-281, 1983

E.C.R.Hehner, C.A.R.Hoare: "a More Complete Model of Communicating Processes", *Theoretical Computer Science*, v.26 p.105-120, 1983 September

C.Lengauer, E.C.R.Hehner: "a Methodology for Programming with Concurrency: an Informal Presentation", *Science of Computer Programming*, v.2 p.1-18, 1982

E.C.R.Hehner, R.K.Shyamasundar: "an Implementation of P and V", *Information Processing Letters*, v.12 n.4 p.196-198, 1981 August

E.C.R.Hehner: "Bunch Theory: a Simple Set Theory for Computer Science", *Information Processing Letters*, v.12 n.1 p.26-30, 1981 February

E.C.R.Hehner: "Design of Concurrent Programs", *INFOR*, v.18 n.4 p.289-299, 1980 Nov

E.C.R.Hehner: "do considered od: a Contribution to the Programming Calculus", *Acta Informatica*, v.11 p.287-304, 1979

E.C.R.Hehner, R.N.S.Horspool: "a New Representation of the Rational Numbers for Fast Easy Arithmetic", *SIAM Journal on Computation*, v.8 n.2 p.124-134, 1979 May

E.C.R.Hehner: "on Removing the Machine from the Language", *Acta Informatica*, v.10 n.3 p.229-243, 1978

E.C.R.Hehner: "Information Content of Programs and Operation Encoding", *Journal of the ACM*, v.24 n.2 p.290-297, 1977 April

E.C.R.Hehner: "Computer Design to Minimize Memory Requirements", *Computer*, v.9 n.9 p.65-70, 1976 August

(Refereed Conference Proceedings)

E.C.R.Hehner: "a Theory of Lazy Imperative Timing", REFINE, Oxford, 2018 July 18

E.C.R.Hehner: "Objective and Subjective Specifications", WST Workshop on Termination, Oxford, 2018 July 18

E.C.R.Hehner: "What is a Procedure?", PAUSE (Present And Ulterior Software Engineering), Villebrumier, France 2015 December 18

E.C.R.Hehner: "Problems with the Halting Problem", Computing2011 Symposium on 75 years of Turing machine and lambda-calculus, Karlsruhe Germany, 2011 Oct 20-21 (invited)

E.C.R.Hehner, L.Naiman: "Netty: a Prover's Assistant", Computation Tools 2011: second conference on Computational Logics, Algebras, Programming, Tools, and Benchmarking, Rome, 2011 September 25-30

A.Tafliovich, E.C.R.Hehner: "Programming with Quantum Communication", seventh workshop on Quantitative aspects of Programming Languages, York UK, 2009 March 28-29

A.Tafliovich, E.C.R.Hehner: "Programming Telepathy: Implementing Quantum Non-locality Games", 10th Brazilian Symposium on Formal Methods, Ouro Preto Brazil, 2007 Aug 29-31

G.T.Leavens, E.C.R.Hehner, et al.: "Roadmap for Enhanced Languages and Methods to Aid Verification", Generative Programming and Component Engineering, Portland Oregon USA, 2006 October 22-26

A.Tafliovich, E.C.R.Hehner: "Quantum Predicative Programming", Mathematics of Program Construction, Kuressaare Estonia, 2006 July 3-5

E.C.R.Hehner: "Retrospective and Prospective for Unifying Theories of Programming", symposium on Unifying Theories of Programming, Durham UK, 2006 February 6-7

E.C.R.Hehner: "Specified Blocks", Verified Software, Zürich, 2005 October 10-14

E.C.R.Hehner: "Probabilistic Predicative Programming", Mathematics of Program Construction, Stirling Scotland, 2004 July 12-14

E.C.R.Hehner, I.T.Kassios: "Theories, Implementations, and Transformations", ZB2002 second annual Z and B conference, Grenoble France, 2002 January 23-25

E.C.R.Hehner, T.S.Norvell: "program2circuit", 5th World Multiconference on Circuits, Systems, Communications, and Computers, Crete, 2001 July 8-15

E.C.R.Hehner, A.M.Gravell: "Refinement Semantics and Loop Rules", FM'99 World Congress on Formal Methods, Toulouse France, 1999 September 20-24

R.F.Paige, E.C.R.Hehner: "Bunches for Object-Oriented, Concurrent, and Real-Time Specification", FM'99 World Congress on Formal Methods, Toulouse France, 1999 September 20-24

E.C.R.Hehner: "Boolean Formalism and Explanations", International Conference on Algebraic Methodology and Software Technology, Munich, 1996 July 1-5 (invited)

T.S.Norvell, E.C.R.Hehner: "Logical Specifications for Functional Programs", International Conference on Mathematics of Program Construction, Oxford, 1992 June

E.C.R.Hehner: "What's wrong with formal programming methods?", International Conference on Computing and Information, Ottawa, 1991 May (keynote address, invited)

E.C.R.Hehner: "Termination is Timing", International Conference on Mathematics of Program Construction, Enschede, The Netherlands, 1989 June (opening address, invited)

E.C.R.Hehner: "Predicate Semantics", 17th Princeton-Hopkins Conference on Information Sciences and Systems, Baltimore, 1983 March 24, p.322 (invited)

C.Lengauer, E.C.R.Hehner: "a Methodology for Programming with Concurrency", CONPAR 81, Nürnberg, 1981 June 10-12

R.N.S.Horspool, E.C.R.Hehner: "Exact Arithmetic Using a Variable-Length P-adic Representation", 4th IEEE Symp. on Computer Arith., Santa Monica, 1978 October, p.10-14

E.C.R.Hehner: "Structuring", Proc. ACM Conference on Principles of Programming Languages, Santa Monica, 1977 January, p.201-205

E.C.R.Hehner: "Language-Directed Representation of Machine Instructions", Proc. IEEE COMPCON, San Francisco, 1976 Spring, p.99-102

(Theses)
      Ph.D. Matching Program and Data Representation to a Computing Environment
              (computer design) supervised by W.M.McKeeman and D.B.Wortman
      M.Sc. The Definition of Random Sequence
              (computability) supervised by D.Tsichritzis
      B.Sc. Applications of Group Theory to Quantum Mechanics and Particle Symmetries
              (theoretical physics) supervised by J.E.Hardy

(Other Publications)
      E.C.R.Hehner: Boundary Algebra, 2021 July 20

      E.C.R.Hehner: Number Representation, 2019 May 6

      E.C.R.Hehner: Concurrency, invited paper in celebration of the work of Jayadev Misra on the occasion of his retirement, Austin Texas, 2016 April 29

      E.C.R.Hehner: a Note on an Equation due to Euler, 2019 April 21

      E.C.R.Hehner: Papers on the Halting Problem 2013-2022: "the Halting Game", "Epimenides, Gödel, Turing: an Eternal Gölden Twist", "How to Compute Halting", "Halting, the Power of Mathematics, and Religion", "Observations on the Halting Problem", "the Halting Game", "a Tale of Two Turing Machines", "Programs, Specifications, and Halting", "Halting Problem", "Reconstructing the Halting Problem", "Problems with the Halting Problem", "the Computability Hierarchy", "Halting According to aPToP"

E.C.R.Hehner: "the Size of a Set", 2013

E.C.R.Hehner, R.Will, L.Naiman, D.Kordalewski, B.Ballo, A.Tafliovich: "the Netty Project", 2011

E.C.R.Hehner: "Portation", 2010 December

E.C.R.Hehner: Essays 1986-2023: "Money and Taxes", "Insurance and Gambling", "the Gambler and the Mathematician", "Cameras Everywhere", "Self", "Abolish Political Parties", "Toward Democracy", "Grammatical Annoyances", "Left-handed Homosexuals", "Teaching Tactics", "the Meaning of Mathematics", "Arguing Atheism", "the End of Evolution", "Sunk Cost Fallacy", "Advice to a Radical Thinker", "Big Numbers", "Gender Equality", "a Tribute to Edsger Dijkstra", "the Nature of Science", "Time Dilation"

E.C.R.Hehner, A.Y.C.Lai: "Misra's Invariant Theorem", 2005 July 6

E.C.R.Hehner: "Programming from Specifications", book review in *Science of Computer Programming* v.16 n.3, 1991 October, p.283-285

E.C.R.Hehner, T. Norvell: "ProTem: a Programming System", CSRI-213, U. of Toronto, 1988 September, and current version

S.L.Gerhart, E.C.R.Hehner, H.D.Mills: "Teaching Formal Methods for Program Development and Verification", panel session in SIGCSE83, ACM SIGCSE Bulletin, Proceedings of the 14th SIGCSE technical symposium on computer science education, v.15 n.1, 1983 February

R.N.S.Horspool, E.C.R.Hehner: Comments on a method for representing data items of unlimited length in a computer memory, IEEE Transactions on Software Engineering, v.8 n.6, 1982 November

E.C.R.Hehner, C.A.R.Hoare: "Another Look at Communicating Processes", CSRG-134, U. of Toronto, 1981 September

E.C.R.Hehner: "Bunch Theory", CSRG-102, U. of Toronto, 1979 July

E.C.R.Hehner: "do considered od: a Contribution to the Programming Calculus", CSRG-75, U. of Toronto, 1976 November

E.C.R.Hehner: "Merlin: Towards an Ideal Programming Language", CSRG-57, U. of Toronto, 1975 July

E.C.R.Hehner: "Matching Program and Data Representation to a Computing Environment", CSRG-44, U. of Toronto, 1975 November

Invited Lectures
U. of Toronto Schools Research Club, 2022 April 11. the Halting Problem
U. of Newcastle, 2018 July 20. Programs and Specifications
U. of Toronto Math Union, 2016 December 2. the Halting Problem
U. of Texas at Austin, 2016 April 29. Concurrency
Memorial U. St.John's, 2014 September 23. Problems with the Halting Problem

Memorial U. St.John's, 2014 September 23. a Probability Perspective
Memorial U. St.John's, 2014 September 22. Practical Predicative Programming Primer
Memorial U. St.John's, 2014 September 22. from Boolean Algebra to Unified Algebra
McMaster U. Hamilton, 2014 April 10. Problems with the Halting Problem
McMaster U. Hamilton, 2014 January 23. Practical Predicative Programming Primer
U. of Waterloo, 2013 November 28. Problems with the Halting Problem
U. of Waterloo, 2013 November 21. Practical Predicative Programming Primer
McMaster U. Hamilton, 2013 November 14. from Boolean Algebra to Unified Algebra
U. of Waterloo, 2013 November 7. from Boolean Algebra to Unified Algebra
IFIP working group 2.3, (approximately 28 talks) 1977-2012
IFIP working group 2.1, (approximately 12 talks) 1998-2012
iFM&ABZ Pisa 2012 June 18-21. Practical Predicative Programming Primer
Karlsruhe Institute of Technology, 2011 October 21. Problems with the Halting Problem
St.Mary's University Halifax, 2010 November 19. from Boolean Algebra to Unified Algebra
Dalhousie University Halifax, 2010 November 18. a Probability Perspective
U. of Waterloo, 2010 April 6. a Probability Perspective
York U. Toronto, 2010 March 19. a Probability Perspective
Queen's U. Kingston Distinguished Speaker, 2010 March 18. a Probability Perspective
Concordia U. Montréal ECE dept, 2008 November 27. a Probability Perspective
Concordia U. Montréal CS dept, 2008 November 26. Practical Predicative Programming Primer
U. California at Irvine Distinguished Speaker 2008 November 14. a Probability Perspective
VSTTE'08 Toronto 2008 October 9. Practical Predicative Programming Primer
McMaster U. Hamilton, 2008 June 19. a Probability Perspective, 2 hours
Technical U. of Lisbon (IST-UTL), (3 talks) 2007 July 11-13. Probabilistic Predicative
        Programming, Incomputable Indeed, from Boolean Algebra to Unified Algebra
U. of Newcastle, UK, 2006 February 9. from Boolean Algebra to Unified Algebra
U. of York, UK, 2006 February 8. from Boolean Algebra to Unified Algebra
U. of Alberta, Edmonton, Distinguished Speaker, 2005 January 17. Bool Alg to Unified Algebra
U. Passau, 2003 July 10. from Boolean Algebra to Unified Algebra
Åbo Akademi, Turku, (5 talks) 2002 August 19-30. a Practical Theory of Programming
U. of York, UK, 2002 January 30. Specifications, Programs, and Total Correctness
Workshop on Programming Methodology, Tandil Argentina, 2000 September 4.
        High-Level Circuit Design
Workshop Argentino en Informática Teórica, Tandil Argentina, 2000 September 5.
        from Boolean Algebra to Unified Algebra
Seminar on Program Design using Logic, Tandil Argentina, (6 talks) 2000 September 6-13.
        a Practical Theory of Programming
Oxford U., 1999 September 14. Formalism and the Variable
York U. Toronto, 1999 May 3. from Boolean Algebra to Unified Algebra
Åbo Akademi, Turku, (8 talks) 1998 August 10-21. a Practical Theory of Programming, BAUA
Glasgow U., 1998 May 5. from Boolean Algebra to Unified Algebra
Cambridge U., 1998 April 24. High-Level Circuit Design
Southampton U., (4 talks) 1998 February, March, April. a Practical Theory of Programming(2),
        from Boolean Algebra to Unified Algebra, Refinement Semantics and Loop Rules
U. British Columbia, 1995 February 8. High-Level Circuit Design
Simon Fraser U., 1995 February 2. High-Level Circuit Design
Universität Passau, 1994 June 10. Abstractions of Time
United Nations U., International Institute for Software Technology, Macau,
        (8 talks) 1994 January 10-23. a Practical Theory of Programming
U. of Ottawa, 1993 April 23. Abstractions of Time
Bell Northern Research, Ottawa, 1993 April 21. a Practical Theory of Programming
U. of Hamburg, 1991 October 11. a Practical Theory of Programming

FORTH Institute, Crete, 1991 October 9. a Practical Theory of Programming
U. of Crete, 1991 October 8. Formalist heresy: mathematics is based on programming
U. of Athens, 1991 October 7. a Practical Theory of Programming
U. of Waterloo, 1991 April 16. the ProTem Programming System
U. Victoria, 1990 August 28. Formalist heresy: mathematics is based on programming
Queen's U., Kingston, 1990 February 15. a Practical Theory of Programming
U. of Waterloo, 1989 October 25. a Practical Theory of Programming
U. of Grenoble, France, 1988 June 20. Formalist heresy: mathematics is based on programming
U. of Geneva, Switzerland, 1988 June 14. Formalist heresy: mathematics is based on programming
INRIA Sophia-Antipolis, France, 1988 May 31. Formalist heresy: math is based on programming
U. of Geneva, Switzerland, 1988 March 22. Semantics of Concurrency and Communication
U. of Geneva, Switzerland, 1988 February 23. Predicative Methodology
CWI (Mathematisch Centrum) Amsterdam, (2 talks) 1987 October 23.
        Predicative Methodology, Semantics of Concurrency and Communication
Rice U., Houston, 1987 April 17. Predicative Methodology
U. of Texas, Austin, 1987 February. Formalist heresy: mathematics is based on programming
Yale U., New Haven, 1986 December 11. Predicative Methodology
U. of Frankfurt, Germany, 1986 August 12. Predicative Methodology
Marktoberdorf International Summer School, (7 talks) 1986 July 29 - August 10.
U. of Victoria, Victoria, B.C., 1986 February 12. Predicative Methodology
U. of Washington, Seattle, 1986 February 11. Predicative Methodology
U. of Texas, Austin, 1985 October 16. Predicative Programming
York U., Toronto, 1984 November 7. Predicative Programming
Queen's U., Kingston, 1984 October 11. Predicative Programming
U. of Copenhagen, 1984 June 8. Predicative Programming
Technical U. of Denmark, 1984 June. Positive Concurrent Programming, Predicative Programming
Aarhus U., Denmark, 1984 June. Positive Concurrent Programming, Predicative Programming
ACM SIGCSE Symposium, Orlando, 1983 February 17. Programming Education
IBM T.J.Watson Research Center, Yorktown Heights, 1982 April 13.Positive Concurrent Prog.
Oregon Graduate Center, 1981 November 19. Positive Concurrent Programming
Queen's U., Kingston, 1981 November 11. Positive Concurrent Programming
Imperial College, London, 1981 June. Positive Concurrent Programming
Oxford U., 1981 April. Structuring
U. of Lisbon, Lisbon, (2 talks) 1981 January 14. **do** considered **od**: a contribution to the
        programming calculus, Positive Concurrent Programming
Xerox Research Center, Palo Alto, (2 talks) 1980 November. **do** considered **od**: a contribution to
        the programming calculus, Positive Concurrent Programming
U. of Newcastle, UK, 1980 April 29. Positive Concurrent Programming
U. of North Carolina, Chapel Hill, 1980 February. Positive Concurrent Programming
Bell Laboratories, New Jersey, (2 talks) 1979 November 30. **do** considered **od**: a contribution to the
        programming calculus, Positive Concurrent Programming
Cornell U., Ithaca, 1979 October 4 Positive Concurrent Programming
U. of California at Santa Cruz, (2 talks) 1979 August **do** considered **od**: a contribution to the
        programming calculus, Semantics of Recursion
Xerox Research Center, Palo Alto, 1978 October 27. **do** considered **od**
Queen's U., Kingston, 1978 March 1. Structuring
U. of Waterloo, 1978 January 12. Structuring
York U., Toronto, 1977 October 14. Structuring
McGill U., Montreal, 1977 May 4. Structuring
Concordia U., Montreal, 1977 May 3. a New Rep of the Rational Numbers for Fast Easy Arithmetic
U. of Waterloo, 1977 March 23. a New Representation of the Rational Numbers for Fast Easy Arithmetic

Undergraduate Teaching (* indicates course design or redesign)
(U. of Toronto)   CSC108 Computer Programming 1974, 1995
                         CSC118 Programming Applications 1975
                         CSC139 Introduction to Computer Programming 1981, 1982
                         CSC149 Programming Techniques and Style 1978, 1979
                         CSC158 Computer Applications 1976, 1977, 1979, 1980, 1984
                       * CSC180 Introduction to Computer Programming 1983-1985, 1988-1991,
                             1995-1999
                         CSC248 Programming Languages 1982, 1983
                       * CSC258 Computer Organization 1974-1980, 1981-1982, 1983, 1985, 1986,
                             1989-1990, 1992-1994, 1997, 1999-2008, 2009-2011, 2015
                         CSC344 Information System Data Language Designs 1975
                         CSC380 System Software I 1982, 1983, 1985
                       * CSC368 Language Processors 1976-1980,1981, 1982
                       * CSC465 Programming Methodology/Formal Methods of Program Design
                             1982-1986, 1988-2007, 2009-2011, 2014-2022
                       * CSC488 Language Processors 1986, 1989, 1991-1994
                       * CSC494 Fourth Year Project, various years
                       * ECE450 Software Engineering II 2000, 2001
                         MATB73 Computer Organization 1973
(McMaster U.)   * COMPSCI3EA3 Software Specifications and Correctness 2019, 2020
(Simon Fraser U.)   * CMPT480 Principles of Programming Languages 1995
(York U.)   * COSC3341 Program Verification 2002
                       * CSC3020 Verification Techniques 1985
(U. of Guelph)   * 27-360 Programming Languages 1973

Graduate Teaching (* indicates course design)
(U. of Toronto)   * CSC2104 Programming Methodology/Formal Methods of Program Design
                             1982-1986, 1988-2007, 2009-2011, 2014-2022
                       * CSC2107 Language Processors 1986, 1989, 1991-1994
                       * CSC2122 Language and Compiler Design 1974-1980, 1984
                       * CSC2124 Topics in Programming Languages 1981, 1982, 1986
(U. of Waterloo)   * ECE750T30 Formal Methods of Software Design 2018
(ConGESE)   * SE02 Formal Methods of Software Design, NorTel 1996, IBM 1997
(U. British Columbia) * CPSC539 Principles of Programming Languages 1995
(Simon Fraser U.)   * CMPT730 Principles of Programming Languages 1995
(Institute for Retraining in Computer Science)
                       * the Science of Programming, Clarkson 1984, Kent State 1985

        for CSC465, ECE450, COSC3341, CSC3320, 27-360, CSC2104, SE02, ECE750T30
        and the two IFRICS courses: the course had not been taught before me; I wrote the
        textbook. for CSC368, CSC488, CSC2107, and CSC2122: the course is based on
        software(compiler components) originally written by me, modified by others, still in use

Students Supervised   Postdoctoral Fellow   2
                          PhD   13
                          Masters   38
                          (sole supervisor, except as indicated)

post-doctor   Wan Jianyi 2005-2006
                Zheng Yuhua 1995-1996

PhD	Lev Naiman 2012-2017 (unfinished)
	Albert Lai 2000-2005, 2012 Eager, Lazy, and Other Executions for Predicative Programming
	David Barton 2009-2011 (unfinished due to death)
	Anya Tafliovich 2004-2010 Predicative Quantum Programming
	Justin Ward 2007-2009 (switched supervisor)
	Ioannis Kassios 2001-2006 a Theory of Object Oriented Refinement
	Chengyan Zhao 2003-2004 (switched supervisor)
	Mark Pichora 1998-2003 Automated Reasoning about Hardware Data Types using Bit Vectors of Symbolic Lengths
	Richard Paige 1993-1997 Formal Method Integration via Heterogeneous Notations
	Theo Norvell 1988-1993 a Predicative Theory of Machine Language and its Application to Compiler Correctness
	John Hogg 1988-1992 Islands: Aliasing Protection in Object Oriented Languages thesis completed; candidate declined to defend
	L.Hon 1990-1991 (unfinished)
	Andrew Malton 1985-1990 Functional Interpretation of Programming Methods
	Alan Wagner 1983-1987 (joint co-supervisor) Embedding Trees in the Hypercube
	Eugene Fiume 1983-1986 (secondary co-supervisor) a Mathematical Semantics and Theory of Raster Graphics
	Hugh Redelmeier 1977-1984 (primary co-supervisor)Towards Practical Functional Programming
	Chris Lengauer 1978-1982 a Methodology for Programming with Concurrency
MSc/MASc	Lev Naiman 2010-2012 Netty: a Prover's Assistant
	Robert Will 2007-2010 Constructing Calculations from Choices - a tool to make proofs more transparent
	Colin Stewart 2005-2008 Compiling VDM-SL to C: a User-Directed Transformational Approach
	Peter Kanareitsev 2001-2008 (unfinished)
	Justin Ward 2005-2007 a Unified Model of Algorithm Design
	Anya Tafliovich 2002-2004 Quantum Programming
	Ioannis Kassios 2000-2001 Theory Theory and an Attempt to Orient Objections to Object Orientation
	Benet Devereux 1999-2001 (secondary co-supervisor) Finite-State Models with Multiplicities
	S.Chow 1999-2000 (unfinished)
	Albert Lai 1996-2000 a Tool to Aid Program Refinement
	Dimi Paun 1997-1999 (secondary cosupervisor) Closure under Stuttering in Temporal Formulas
	Mark Rainsberger 1997-1999 (unfinished)
	Victor Kwan 1995-1998 a Predicative Model for Probabilistic Specifications and Programs
	Dora Cheng 1992-1998 System Integration of Automated Mapping Facilities Management
	Patrick Prémont 1996-1997 the Situation Calculus and Hehner's Programming Theory
	Jagdeep Dhillon 1990-1995 CSOM: an Object Oriented Concurrent System
	Richard Paige 1992-1993 Correctness and Performance Analysis of Imperative and Fctnl Circuits
	Ray Blaak 1989-1993 Talk Talk: Issues in Describing Communicating Processes
	Brian Parkinson 1990-1991 Automated Theorem Proving in the ProTem Programming Language
	Oliver Au 1986-1990 a Survey of Message Passing Techniques
	Theo Norvell 1985-1988 Expressions, Types, and Data Structures in ProTem
	W.Macdonald 1983-1987 (lost thesis title)
	Andrew Malton 1983-1985 an Investigation of Program Expressions
	Lorene Gupta 1983-1985 Predicative Programs and Paradigms
	Tiong-Keat Tan 1982-1983 Design of an Expressive Polymorphic Language and its Processor
	Chris Retterath 1982-1983 (primary co-supervisor) the Interactive Devel't of P'g'ms and Proofs
	William Robison 1984-1986 a Deterministic Trace Semantics for Communicating Sqtl Processes
	Lawrence Shum 1981-1986 (lost thesis title)

Donald Chan 1981-1985 Types in Procedural Programming Languages
Eugene Fiume 1982-1983 (secondary co-supervisor)
Leigh Clayton 1976-1982 the Organization of Multiple Processor Complexes
Ken Day 1977-1982 Alegra: a Language for Expressing Grammars and Algorithms
Stephen Gretton 1978-1981 Denotational Semantics
Paul Lear 1978-1980 Data Abstraction using Algebraic Axioms
R.Craig 1978-1980 Applicative Computing
Jim desRivières 1976-1980 the Design of an Interactive Program Manipulation System
Richard Levine 1976-1979 a Human-Computer Interface for Interactive Information Processing
Henry Spencer 1976-1979 Code Generation for Unfriendly Machines
Chris Lengauer 1977-1978 Axiomatic Verification of Concurrent Algorithms
Brad Silverberg 1976-1977 using a Grammatical Formalism as a Programming Language
Raj Sharma 1976-1977 (lost thesis title)

External PhD Examiner

Kim Solin, Åbo Akademi, Turku, Finland, 2007
Leonid Mikhajlov, Åbo Akademi, Turku, Finland, 1999
Marc Frappier, U. of Ottawa, 1995
Nigel Ward, U. of Queensland, 1994
John Plaice, U. de Grenoble, 1988
Carlos Rodriguez, U. de Grenoble, 1988

Administrative Experience

SGS Graduate Academic Appeals Board, representative for Division III, 2004-2011
Computer Science designated SGS PhD defense chair, 2009-2011
Computer Science Senior Promotions Committee, 2010-2011
Software Engineering Group CSlab liaison, 2010-2011
Computer Science Graduate Committee, 1988-2001, 2004-2011
Computer Science Graduate Breadth Evaluator, 2006-2008
Computer Science Undergraduate Committee member, 1975-1979, 2005-2006
Computer Science Graduate Coordinator, 1988-1997, 1999-2000
Computer Science Senior Promotions Committee, 1997, 2000
MSc Admissions Committee, Graduate Admissions Committee,1976-1978,1988-1997
ConGESE representative for UofT, 1995-2001
ConGESE Curriculum Committee, 1995-1998
School of Graduate Studies NSERC Ranking Committee, 1992-1994
UTFA representative, Computer Science and Statistics, 1988-1991
School of Graduate Studies Executive Committee, 1988-1989, 1990-1991, 1996-1997
Computer Science Associate Chair, 1983-1987
Computer Science Department Council, 1983-1997
School of Graduate Studies Degree Committee, 1991-1996
Chair, Departmental Committee on Computing Resources, 1983-1984
Chair, Committee for the Computing Discipline's Facility, 1982-1984
Erindale Discipline Representative for Computer Science, 1979-1980
Coordinator for Computer Systems Seminars, 1975-1979
Erindale Computer Users Committee member, 1974-1979
Erindale Library Committee member, 1976-1978

Other Service quality assessor, Postsecondary Education Quality Assessment Board of Ontario
(PEQAB), 2014-2016
editor, *Acta Informatica*, Springer, Heidelberg, 1984-2012
editor, *Formal Aspects of Computing,* Springer, Heidelberg, 1988-2012

meeting host, IFIP WG2.1 2012 October 8-12

program committee member, Refine 2011

program committee member, Mathematics of Program Construction
1989, 1992, 1995, 2002, 2004, 2008, 2010

distance education course development, Walden University, National Technological
University, College of Engineering and Science, 2006-2012

host and local organizer and program committee member, VSTTE'08 International
Conference on Verified Software 2008

program committee member, UTP'08 Unifying Theories of Programming, 2008

program committee member, ICFEM'03 International Conference on Formal
Engineering Methods 2003

evaluator for Academy Professorships, Academy of Finland 2001

conference track organizer and program committee member,
FM99 World Congress on Formal Methods, 1999

meeting host, IFIP WG2.3, 1993 July, 2005 June

secretary, IFIP WG2.3, 1977-2002

curriculum development, ConGESE, 1992-1994

committee member, ACM Karl V. Karlstrom Outstanding Educator award, 1992-1994

chair, ACM Karl V. Karlstrom Outstanding Educator award, 1993

advisor, ACM Scholastic Programming Contest 1992-1994

program committee member, IFIP TC2 conference on Algorithmic Languages and
Calculi 1996

program committee member, IEEE international conference on Computer Languages
1992

editor, *Information Processing Letters,* Elsevier, Amsterdam, 1984-1991

program committee member, IFIP TC2 conference on Constructing Programs from
Specifications 1991

program committee member, IFIP TC2 conference on Programming Concepts and
Methods 1990

referee for various journals and granting agencies (NSERC, FCAR, NSF, Academy of Finland)

I wrote the software for recording and calculating grades used by my department
from 1986 to 2012 (26 years)