Curriculum Vitae
April 2019

Biographical information

Personal:

Family name:	Christara
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Degrees:

1988	Ph.D.	Department of Computer Science	Purdue University	W. Lafayette, IN, U.S.A.
1986	M.Sc.	Department of Computer Science	Purdue University	W. Lafayette, IN, U.S.A.
1982	B.Sc.	Department of Mathematics	Aristotle University	Thessaloniki, Greece

Ph.D. Thesis Title	Spline collocation methods, software and architectures for linear elliptic boundary value problems
Supervisor	Professor Elias N. Houstis

Employment:

2018-	Professor	Depart. of Computer Science, University of Toronto, Toronto, Canada
1994-18	Associate Professor	Depart. of Computer Science, University of Toronto, Toronto, Canada
1989-94	Assistant Professor	Depart. of Computer Science, University of Toronto, Toronto, Canada
1988-89	Post-Doctoral Fellow	Depart. of Computer Science, University of Toronto, Toronto, Canada
1987-88	Research Assistant	Depart. of Computer Science, Purdue University, W. Lafayette, IN, U.S.A.
1984-86	Teaching Assistant	Depart. of Computer Science, Purdue University, W. Lafayette, IN, U.S.A.

Honours:

Professional Affiliations and Activities (incl. Editorial Boards):

- Editor-in-Chief of the journal Mathematics and Computers in Simulation (since 2018).
- Associate Editor of the journal Applied Mathematics and Computation (since 2008).
- Associate Editor of the journal Numerical Algorithms (since 2014).
- Associate Editor of the journal Mathematics and Computers in Simulation (2017-2018).
- Guest Editor for the journal Applied Numerical Mathematics; special issue on Iterative Methods in Scientific Computing, Volume 58, Issue 4, Pages 377-524 (April 2008).

- Member of the Board (since August 2013) and General Secretary (since December 2016) of the International Association for Mathematics and Computers in Simulation (IMACS).
- Member of Canadian Applied and Industrial Mathematics Society (CAIMS)
- Member of International Association for Mathematics and Computers in Simulation (IMACS)
- Member of the technical committee on Linear Algebra of IMACS
- Member of the Society of Industrial and Applied Mathematics (SIAM)

Academic history

Research endeavours:

Partial Differential Equations (PDEs) are the basis of many mathematical models of important physical and technological phenomena. For example, PDEs are essential mathematical elements for the prediction of weather and climate or the construction of high-rise buildings. My research involves the development and analysis of numerical methods for PDEs, and the development, testing and evaluation of mathematical software for the solution of PDEs on a variety of computer architectures. More specifically, I develop, analyze and implement optimal order spline collocation discretization methods for PDEs, efficient solution techniques for the arising linear systems – such as fast direct solvers, iterative methods, preconditioners, and parallel computation techniques – and extensions of these methods to non-uniform and adaptive meshes, as well as non-rectangular domains. More recently, my research includes the application of discretization methods, including spline collocation, and solvers to weather prediction, structural mechanics (three-dimensional stress analysis) and financial problems, all these being areas strategically important and having a direct impact on the economy and the development of other related fields of science. In particular, the area of pricing financial derivatives via PDE approaches, including the formulation of the associated PDE problems, the discretization, localization, error analysis and efficient solution techniques, has been the focus of my latest research works.

Keywords:

- Numerical Methods and Analysis
- Scientific Computing
- Computational Mathematics
- Parallel Computing
- Mathematical Software
- Computational Methods for PDEs
- Solution of Large Sparse Linear Systems
- Applications of Numerical Methods to finance, weather prediction, mechanics, etc.
- Expert Systems for Scientific Computing

Research Awards (recent):

Agency	*Amount*	*Dates*	*Status*	*co-PIs*
NSERC discovery	$ 18,000 per year	2015-2020	held	
NSERC equipment	$ 46,498	2012-2014	expired	with 2 others
NSERC discovery	$ 25,000 per year	2010-2015	expired	
NSERC discovery	$ 18,000 per year	2005-2010	expired	
NSERC equipment	$ 59,714	2007-2009	expired	with 3 others

Scholarly and professional work (Research activities)

Career publication count:

Scholarly books (authored)	0
Scholarly books (edited)	0
Chapters in books	2
Papers in refereed journals	24
Papers in refereed conferences	19
Major invited conferences	35
Other conferences (abstracts, posters, contributions)	42
Other publications	5

Articles in refereed journals:

1. C. C. Christara and Nat C-H Leung, ''Analysis of quantization error in financial pricing via finite difference methods'', *SIAM J. Numer. Anal.*, **56:3**, 2018, pp. 1731-1757.

2. Nat C-H Leung, C. C. Christara and D. M. Dang, ''Partial Differential Equation pricing of contingent claims under stochastic correlation'', *SIAM J. Scientific Computing*, **40:1**, 2018, pp. B1-B31.

3. V. Heidarpour-Dehkordi and C. C. Christara, ''Spread option pricing using ADI methods'', *International J. Numerical Analysis and Modelling*, **15:3**, 2018, pp. 353-369.

4. C. C. Christara and Nat C-H Leung, ''Option pricing in jump diffusion models with quadratic spline collocation'', *Applied Mathematics and Computation*, **279**, 10 April 2016, pp. 28-42.

5. D. M. Dang, C. C. Christara, K. R. Jackson and A. Lakhany, ''An efficient numerical PDE approach for pricing foreign exchange interest rate hybrid derivatives'', *Journal of Computational Finance*, **18:4**, 2015, pp. 39-93.

6. D. M. Dang, C. C. Christara and K. R. Jackson, ''Graphics processing unit pricing of exotic cross-currency interest rate derivatives with a foreign exchange volatility skew model'', *Journal of Concurrency and Computation: Practice and Experience (JCCPE)*, **26:9**, 2014, pp. 1609–1625.

7. D. M. Dang, C. C. Christara and K. R. Jackson, ''A highly efficient implementation on GPU clusters of PDE-based pricing methods for path-dependent foreign exchange interest rate derivatives'', *Lecture Notes in Computer Science (LNCS)*, **7975**, 2013, pp. 107–126.

8. D. M. Dang, C. C. Christara and K. R. Jackson, ''An efficient GPU-based parallel algorithm for pricing multi-asset American options'', *Journal of Concurrency and Computation: Practice and Experience (JCCPE)*, **24:8**, 2012, pp. 849–866, doi: 10.1002/cpe.1784.

9. C. C. Christara and D. M. Dang, ''Adaptive and high-order methods for valuing American options'', *Journal of Computational Finance*, **14:4**, 2011, pp. 73–113.

10. D. M. Dang, C. C. Christara and K. R. Jackson, ‘‘A Parallel Implementation on GPUs of ADI Finite Difference Methods for Parabolic PDEs with Applications in Finance’’, *Canadian Applied Mathematics Quarterly*, **17:4**, 2009 (published in 2011), pp. 627–660, issue to commemorate the 30th anniversary of CAIMS, 2009.

11. C. C. Christara, T. Chen and D. M. Dang, ‘‘Quadratic spline collocation for one-dimensional parabolic partial differential equations’’, *Numerical Algorithms*, **53:4**, 2010, pp. 511–553, doi:10.1007/s11075-009-9317-9, http://www.springerlink.com/content/v1g8565702373446/

12. C. C. Christara and K. S. Ng, ‘‘Optimal quadratic and cubic spline collocation on non-uniform partitions’’, *Computing*, **76:3-4**, 2006, pp. 227–257.

13. C. C. Christara and K. S. Ng, ‘‘Adaptive techniques for spline collocation’’, *Computing*, **76:3-4**, 2006, pp. 259–277.

14. A. T. Layton, C. C. Christara and K. R. Jackson, ‘‘Quadratic spline methods for the shallow water equations on the sphere: Galerkin’’, *Mathematics and Computers in Simulation*, **71:3**, 2006, pp. 175-186.

15. A. T. Layton, C. C. Christara and K. R. Jackson, ‘‘Quadratic spline methods for the shallow water equations on the sphere: collocation’’, *Mathematics and Computers in Simulation*, **71:3**, 2006, pp. 187-205.

16. K. Latychev, J. X. Mitrovica, J. Tromp, M. E. Tamisiea, D. Komatitsch and C. C. Christara, ‘‘Glacial isostatic adjustment on 3-D Earth models: a finite-volume formulation’’, *Geophys. J. Int.*, **161:2**, 2005, pp. 421–444.

17. K. Latychev, J. X. Mitrovica, M. E. Tamisiea, J. Tromp, C. C. Christara and R. Moucha, ‘‘GIA-induced secular variations in the Earth’s long wavelength gravity field: Influence of 3-D viscosity variations’’ (short communication), *Earth and Planetary Science Letters*, **240:2**, 2005, pp. 322–327.

18. C. C. Christara and K. S. Ng, ‘‘Fast Fourier Transform Solvers and Preconditioners for Quadratic Spline Collocation’’, *BIT*, **42:4**, December 2002, pp. 702–739.

19. C. C. Christara and B. F. Smith, ‘‘Multigrid and Multilevel Methods for Quadratic Spline Collocation’’, *BIT*, **37:4**, 1997, pp. 781–803.

20. C. C. Christara, ‘‘Parallel Solvers for Spline Collocation Equations’’, *Advances in Engineering Software,* **27:1/2**, 1996, pp. 71–89.

21. C. C. Christara, ‘‘Quadratic Spline Collocation Methods for Elliptic Partial Differential Equations’’, *BIT,* **34:1**, 1994, pp. 33–61.

22. C. C. Christara, ‘‘Schur complement preconditioned conjugate gradient methods for spline collocation equations’’, *Computer architecture news,* **18:3,** 1990, and proceedings of the 1990 *International Conference on Supercomputing (ICS90),* June 11-15, 1990, Amsterdam, the Netherlands, pp. 108–120.

23. E. N. Houstis, C. C. Christara and J. R. Rice, ‘‘Quadratic Spline Collocation Methods for two point boundary value problems’’, *International Journal for Numerical Methods in Engineering,* **26:4,** April 1988, pp. 935–952.

24. E. N. Houstis, J. R. Rice, C. C. Christara and E. A. Vavalis, ‘‘Performance of Scientific Software’’ *Mathematical Aspects of Scientific Software, The IMA Volumes in Mathematics and its applications,* **14,** Springer Verlag, 1988, pp. 123−155.

Book chapters (refereed):

25. C. C. Christara and K. R. Jackson, ‘‘Scientific Computing by Numerical Methods’’, *Encyclopaedia of Applied Physics*, Vol **17**, 1996, pp. 1−79.

26. C. C. Christara and K. R. Jackson, ‘‘Numerical Methods’’, *Mathematical Tools for Physicists*, Ed. G. Trigg, Wiley, 2005, pp. 281−383, doi: 10.1002/3527607773.ch10

Articles in refereed conference proceedings:

27. Christina Christara and Yuwei Chen, ‘‘A penalty-like method for CVA pricing by a PDE model’’, accepted in proceedings of the International Conference on Computational Finance (ICCF), July 8-12, 2019, (satellite conference of ICIAM 2019), A Coruña, Spain, 4 pages.

28. Christina C. Christara and Nat Chun-Ho Leung, ‘‘Option pricing with regime switching correlation: a numerical PDE approach’’, to appear in proceedings of the International Conference on Computational and Informational Sciences and Engineering, honouring Professor Elias N. Houstis, University of Thessaly publications, September 2018, pp. 43-57.

29. D. M. Dang, C. C. Christara and K. R. Jackson, ‘‘Pricing multi-asset American options on Graphics Processing Units using a PDE approach’’, proceedings of the Workshop on High Performance Computational Finance at SC10 (WHPCF’10), International Conference for High Peformance Computing, Networking and Storage Analysis (sponsored by ACM/IEEE), November 13-19, 2010, New Orleans, LA, U.S.A., pp. 1−8.

30. D. M. Dang, C. C. Christara, K. R. Jackson and A. Lakhany, ‘‘A PDE pricing framework for cross-currency interest rate derivatives’’, proceedings of the 2010 Workshop on Computational Finance and Business Intelligence, International Conference In Computational Science (ICCS), May 31 to June 2, 2010, Amsterdam, The Netherlands, pp. 2371-2380.
This paper received the *Green Group Award* on Computational Finance and Business Intelligence (CFBI) at ICCS 2010.

31. C. C. Christara, D. M. Dang, K. R. Jackson and A. Lakhany, ‘‘A PDE pricing framework for cross-currency interest rate derivatives with target redemption features’’, proceedings of the *International Conference of Numerical Analysis and Applied Mathematics (ICNAAM)*, September 19-25, 2010, Rodos, Greece, American Institute of Physics conference proceedings series, Vol 1281, pp. 330-333.

32. C. C. Christara and G. H. Liu, ‘‘Quartic spline collocation for second-order boundary value problems’’, proceedings of the 9th *HERCMA Conference on Computer Mathematics and Applications*, September 23-26, 2009, Athens University of Economics and Business, Athens, Greece, pp. 1−8.

33. C. C. Christara, Y. Zhu and J. Zhang, ‘‘Quartic spline collocation for fourth-order boundary value problems’’, proceedings of the 2008 *Conference in Numerical Analysis (NumAn08)*, September 1-5, 2008, Kalamata, Greece, pp. 62–67.

34. C. C. Christara, T. Chen and D. M. Dang, ‘‘Spline collocation for parabolic partial differential equations’’, proceedings of the 2007 *Conference in Numerical Analysis (NumAn07)*, September 3-7, 2007, Kalamata, Greece, pp. 45–50.

35. C. C. Christara and J. Zhang, ‘‘A High-Performance Method for the Biharmonic Dirichlet Problem on Rectangles’’, proceedings of the 2007 *International Conference On Preconditioning Techniques for Large Sparse Matrix Problems in Scientific and Industrial Applications*, July 9-12, 2007 Météopole, Toulouse, France, pp. 35–37.

36. C. C. Christara, X. L. Ding and K. R. Jackson, ‘‘An Efficient Transposition Algorithm for Distributed Memory Computers’’, *High Performance Computing Systems and Applications 1999,* A. Pollard, D. J. K. Mewhort and D. F. Weaver eds. (proceedings of the HPCS99 conference, June 13-16, 1999, Queen’s University, Kingston, Ontario, Canada), pp. 349–368, Kluwer Academic Publishers, 2000.

37. C. C. Christara, ‘‘Fast Solvers for Quadratic Spline Collocation Equations’’, proceedings of the *IMACS† 2000 International Conference on Scientific Computing and Mathematical Modeling*, May 27-29, 2000, University of Wisconsin-Milwaukee, Milwaukee, WI, U.S.A., pp. 66–70.

38. C. C. Christara, ‘‘High Performance Computing of elliptic Partial Differential Equations with spline collocation methods’’, *Advances in Parallel and Vector Processing for Structural Mechanics,* B. H. V. Topping and M. Papadrakakis eds. (proceedings of the 1994 Computational Structures Technology conference, CST94, August 30 - September 1, 1994, Athens, Greece, sponsored by Civil-Comp), Vol. A, pp. 1–12.

39. C. C. Christara, ‘‘Parallel Computation of Partial Differential Equations on Distributed Memory Machines’’, *Advances in Computer Methods for Partial Differential Equations - VII,* R. Vichnevetsky, D. Knight, G. Richter eds. (proceedings of the 7th IMACS International Conference on Computer Methods for Partial Differential Equations, June 22-24, 1992, Rutgers University, New Brunswick, NJ, U.S.A.), pp. 142–149.

40. C. C. Christara, ‘‘Multicolour orderings and iterative methods for elliptic equations’’, proceedings of the *Supercomputing Symposium ’91 (SS91),* June 3-5, 1991, Fredericton, NB, Canada, pp. 221–230.

41. C. C. Christara, ‘‘Domain Decomposition and Incomplete Factorisation Methods for Partial Differential Equations’’, proceedings of the sixth *Distributed Memory Computing Conference (DMCC6),* April 28 - May 1, 1991, Portland, OR, U.S.A., pp. 369–377.

42. C. C. Christara, ‘‘Conjugate gradient methods for spline collocation equations’’, proceedings of the fifth *Distributed Memory Computing Conference (DMCC5),* April 8-12, 1990, Charleston, SC, U.S.A., pp. 550–558.

43. C. C. Christara and E. N. Houstis, ‘‘A Domain Decomposition Spline Collocation Method for Elliptic Partial Differential Equations’’, proceedings of the fourth *Conference on Hypercubes, Concurrent Computers and Applications (HCCA4),* March 6-8, 1989, Monterey, CA, U.S.A., pp. 1267–1273.

44. C. C. Christara, A. Hadjidimos, E. N. Houstis, J. R. Rice and E. A. Vavalis, ‘‘Geometry Decomposition based Methods for solving Elliptic Partial Differential Equations’’, *Comp. Methods in Flow Analysis,* (H. Niki and M. Kawahara, eds), 1988, Univ. of Okayama, Japan, pp. 175–182.

45. C. C. Christara, E. N. Houstis and J. R. Rice, ‘‘A Parallel Spline Collocation – Capacitance Method for Elliptic Partial Differential Equations’’, proceedings of the 1988 *International Conference on Supercomputing (ICS88),* July 1988, Saint-Malo, France, pp. 375–384.

Articles submitted to refereed journals:

Other (non-refereed or lightly refereed):

46. Jienan Yao and Christina Christara, ‘‘Numerical PDE Methods for a Discontinuous Diffusion Problem with Application to Brain Cancer Growth’’, *Review of Undergraduate Computer Science (RUCS)*, Fall 2018, 4 pages, `http://rucs.ca/numerical-pde-methods-for-discontinuous-coefficient-problem`

Technical Reports (non-refereed):

47. C. C. Christara and K. S. Ng, ‘‘Quadratic spline collocation revisited: extension to systems of elliptic PDEs’’, DCS Tech. Rep. 318, 2002, 32 pages.

48. C. C. Christara and K. S. Ng, ‘‘Optimal Quadratic and Cubic Spline Collocation on Non-Uniform Partitions’’, DCS Tech. Rep. 320, 2002, 36 pages, preliminary version of [10] and [11].

49. C. C. Christara and K. S. Ng, ‘‘Fast Fourier Transform Solvers and Preconditioners for Quadratic Spline Collocation’’, DCS Tech. Rep. 317, 2000, 33 pages, preliminary version of [16].

50. C. C. Christara, ‘‘Quadratic Spline Collocation Methods for Elliptic Partial Differential Equations’’, DCS Tech. Rep. 235, 1990, 34 pages, preliminary and more detailed version of [19].

Thesis:

51. C. C. Christara, ‘‘Spline collocation methods, software and architectures for linear elliptic boundary value problems’’, *Ph.D. thesis, Purdue University,* IN, U.S.A., 1988.

Invited lectures:

– Christina Christara, ‘‘Spline collocation methods for a PDE with discontinuous diffusion coefficient’’, Centre for Computational Science and Engineering (CCSE), November 30, 2018, University of Toronto, Toronto, ON, Canada.

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† IMACS: International Association for Mathematics and Computers in Simulation

- ‘‘PDE option pricing with stochastic correlations’’, Seminar, Department of Mathematics, University of Crete, January 11, 2018, Heraklion, Crete, Greece.
- ‘‘Effect of initial conditions discontinuity on the numerical solution of parabolic PDEs: applications to finance’’, Canadian Applied and Industrial Mathematics Society (CAIMS) annual meeting, July 17-21, 2017, Dalhousie University, Halifax, NS, Canada.
- ‘‘PDE option pricing with variable correlations’’, International Conference on Statistical Distributions and Applications, October 14-16, 2016, Niagara Falls, ON, Canada.
- ‘‘Adaptive and non-adaptive spline collocation methods for PDEs with discontinuous coefficients: application to brain cancer growth’’, Canadian Applied and Industrial Mathematics Society (CAIMS) annual meeting, June 26-30, 2016, University of Alberta, Edmonton, AB, Canada.
- ‘‘Spread option pricing using ADI methods’’, Sixth Conference on Numerical Analysis and Applications (NAA 2016), June 15-22, 2016, Lozenetz, Bulgaria.
- ‘‘Numerical PDE methods for spread option pricing’’, The Tenth International Conference on Scientific Computing and Applications (ICSCA 2016), June 6-10, 2016, The Fields Institute, Toronto, ON, Canada.
- ‘‘PDE pricing of financial instruments with stochastic correlation’’, Numerical Solution of Differential and Differential-Algebraic Equations (NUMDIFF-14), September 7-11, 2015, Halle, Germany.
- ‘‘Numerical methods for discontinuous diffusion parabolic PDEs with application to brain tumor growth’’, CAIMS Annual Meeting, June 22-26, 2014, Saskatoon, SK, Canada.
- ‘‘Adaptive and high-order PDE pricing of financial derivatives’’, CAIMS Annual Meeting, June 16-20, 2013, Quebec City, QC, Canada.
- ‘‘Adaptive and high-order PDE pricing of financial derivatives’’, BIRS Workshop 12w5021 on Eigenvalues/singular values and fast PDE algorithms: acceleration, conditioning, and stability, June 24-29, 2012, Banff, Alberta, Canada.
- ‘‘Adaptive and high-order PDE methods for pricing American options’’, minisymposium on highly efficient numerical methods in finance, European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS), September 10-14, 2012, Vienna University of Technology, Vienna, Austria.
- ‘‘GPU Parallelization of ADI Finite Difference Methods for Parabolic PDEs’’, minisymposium ‘‘MS193 Scandalously Parallelizable Methods for ODE/PDE Simulations’’, International Congress for Industrial and Applied Mathematics (ICIAM11), July 17-22, 2011, Vancouver Convention Centre, Canada.
- ‘‘High-performance scientific computing: PDE-modelled problems’’, McMaster University, Department of Computing and Software colloquium, November 23, 2011, McMaster University, Canada.
- ‘‘A PDE pricing framework for cross-currency interest rate derivatives with target redemption features’’, *Symposium in Computational Finance* at ICNAAM (International Conference of Numerical Analysis and Applied Mathematics), Monday 20 September 2010, Rodos, Greece.

- ''Quartic spline collocation for second-order boundary value problems'', minisymposium on Recent Developments in Numerical Methods for PDEs, *Canadian Applied and Industrial Mathematics Society (CAIMS) annual conference*, The University of Western Ontario, Friday 12 June 2009, London, Ontario, Canada.
- ''Computational partial differential equations: accuracy, efficiency, adaptivity and parallelism'', Southern Ontario Numerical Analysis Day, *York University,* Friday 9 May 2008, Toronto, Ontario, Canada.
- ''A High-Performance Method for the Biharmonic Dirichlet Problem on Rectangles'', Numerical Analysis Symposium in commemoration of Gene Golub, Waterloo University, Friday 29 February 2008.
- ''Computational partial differential equations: the accurate, the fast and the ugly'', colloquium, Computational Science and Engineering, Queen's University, Tuesday 27 November 2007.
- ''High performance scientific computing'', Waterfront International, Wednesday 7 March 2007.
- ''High performance computing for partial differential equations'', McMaster University, Thursday 6 April 2006, Hamilton, Ontario, Canada.
- ''High performance computing for partial differential equations'', *University of Toronto Institute for Aerospace Studies (UTIAS)*, May 31, 2004, Toronto, Ontario, Canada.
- ''Adaptive Spline Collocation'', Department of Mathematics and Computer Science, *Colorado School of Mines*, March 31, 2003, Golden, Colorado, U.S.A.
- ''Optimal Quadratic and Cubic Spline Collocation on Non-Uniform Partitions'', Department of Mathematics, *York University*, October 11, 2002, Toronto, Ontario, Canada.
- ''Fast Fourier transform solvers and preconditioners for quadratic spline collocation'', Department of Mathematics, *University of Crete,* September 19, 2002, Heraklion, Greece.
- ''Fast Solvers for Quadratic Spline Collocation Equations'', *IMACS 2000 International Conference on Scientific Computing and Mathematical Modeling*, May 27-29, 2000, University of Wisconsin-Milwaukee, Milwaukee, WI, U.S.A.
- ''High-performance spline collocation methods'', mini-symposium on Spline Collocation Methods for Partial Differential Equations, the 1999 International Congress on Industrial and Applied Mathematics (ICIAM99), July 5-9, 1999, *University of Edinburgh*, Edinburgh, Scotland, Britain.
- ''Fast Solvers for Partial Differential Equations and their Parallel Computation'', Canadian Applied Mathematics Society 18th Annual Meeting, *The Fields Institute,* May 30-June 1, 1997, Toronto, Ontario, Canada.
- ''High Performance Computing Methods for Partial Differential Equations'', *University of Thessaly,* May 23, 1996, Volos, Greece.
- ''Multigrid Methods for Quadratic Spline Collocation'', 13th Southern Ontario Numerical Analysis Day, *University of Waterloo,* May 12, 1995, Waterloo, Ontario, Canada.

- ''Schwarz Methods for Quadratic Spline Collocation'', *University of Waterloo,* March 24, 1994, Waterloo, Ontario, Canada.
- ''High Performance Computing of Spline Collocation Equations'', Scientific Computing and Mathematical Modelling Conference, *Eastern Illinois University,* December 3-4, 1993, Charleston, Illinois, U.S.A.
- ''Parallel Computation of PDEs: the case of spline collocation'', *The Norwegian Institute of Technology,* July 5, 1993, Trondheim, Norway.
- ''Parallel Computation of Partial Differential Equations on Distributed Memory Machines'', *University of Illinois at Urbana-Champaign,* May 27, 1992, Urbana-Champaign, IL, U.S.A.
- ''Domain Decomposition – Spline Collocation Methods for Elliptic Partial Differential Equations'', *University of Waterloo,* March 1989, Waterloo, Ontario, Canada and *Carleton University,* April 1989, Ottawa, Ontario, Canada.

Papers presented at conferences (oral and by me, unless otherwise stated):

- ''Option pricing with stochastic correlations via a PDE approach'', Canadian Applied and Industrial Mathematics Society (CAIMS) annual meeting, June 4-7, 2018, Ryerson University, Toronto, ON, Canada.
- ''Adaptive and non-adaptive spline collocation methods for a discontinuous diffusion PDE with application to brain cancer growth'', Workshop on Adaptive Numerical Methods for Partial Differential Equations with Applications, May 27 - June 1, 2018, Banff International Research Station, Banff, AB, Canada.
- ''Study of initial conditions discontinuity effect on the numerical solution of parabolic PDEs: applications to finance'', Workshop on Applied Mathematics Techniques for Energy Markets in Transition, September 18-22, 2017, Lorentz Center, University of Leiden, Leiden, The Netherlands.
- ''Numerical solution of PDEs with discontinuous coefficients: application to brain cancer growth'', Hellenic-Canadian Academic Association of Ontario Symposium, April 8, 2017, University of Toronto, Toronto, ON, Canada.
- ''Partial Differential Equation pricing of financial instruments under stochastic correlation'', 20th IMACS World Congress, December 11-15, 2016, Xiamen, China.
- ''PDE option pricing with variable correlations'', International Conference on Computational and Informational Sciences and Engineering, honouring Professor Elias N. Houstis, June 21-24, 2016, Portaria, Volos, Greece.
- ''Efficient GPU pricing of interest rate derivatives: PDE formulation and ADI methods'', Conference in Numerical Analysis (NumAn14), September 2-5, 2014, Chania, Greece.
- ''Pricing foreign exchange interest rate hybrids: PDE modelling and computational methods'', 19th IMACS World Congress, August 26-30, 2013, Real Centro Universitario El Escorial-Maria Cristina, El Escorial, Spain.

- ‘‘PDE modeling and pricing of Power Reverse Dual Currency swaps’’, International Conference on Scientific Computation And Differential Equations (SciCaDE11), July 11-15, 2011, University of Toronto, Canada.
- ‘‘Quartic spline collocation for second-order boundary value problems’’, 9th HERCMA Conference on Computer Mathematics and Applications, September 23-26, 2009, Athens University of Economics and Business, Athens, Greece.
- ‘‘A high performance method for the biharmonic Dirichlet problem on rectangles’’, 18th IMACS World Congress, August 2-5, 2009, The University of Georgia Center, Athens, GA, U.S.A.
- ‘‘Quartic spline collocation for fourth-order boundary value problems’’, Numerical Analysis and Scientific Computing with Applications (NASCA) conference, May 18-22, 2009, Agadir, Morocco.
- ‘‘Quartic spline collocation for fourth-order boundary value problems with an application to the biharmonic Dirichlet problem’’, Conference in Numerical Analysis (NumAn08), September 1-5, 2008, Kalamata, Greece.
- ‘‘Quartic spline collocation for fourth-order boundary value problems with an application to the biharmonic Dirichlet problem’’, Canadian Applied and Industrial Mathematics Society (CAIMS) annual conference and second Canada-France Congress, June 1-5, 2008, Université de Québec à Montréal, Montréal.
- ‘‘Spline collocation for parabolic partial differential equations’’, Conference in Numerical Analysis (NumAn07), September 3-7, 2007, Kalamata, Greece.
- ‘‘A High-Performance Method for the Biharmonic Dirichlet Problem on Rectangles’’, International Conference On Preconditioning Techniques For Large Sparse Matrix Problems In Scientific And Industrial Applications, July 9-12, 2007, Météopole, Toulouse, France.
- ‘‘Spline collocation for parabolic partial differential equations’’, 6th International Congress on Industrial and Applied Mathematics (ICIAM07), July 16-20, 2007, ETH, Zurich, Switzerland.
- ‘‘Adaptive spline collocation’’, Canadian Applied and Industrial Mathematics Society (CAIMS) annual conference, mini-symposium on Spline Collocation and Differential Equations -- more than you wanted to know, but less than can be said, May 20-24, 2007, Banff, Alberta, Canada.
- ‘‘Optimal Quadratic Spline Collocation on Non-Uniform Partitions’’, joint *Canadian Applied and Industrial Mathematics Society (CAIMS) and Society for Industrial and Applied Mathematics (SIAM) annual meeting*, June 16-20, 2003, Montréal, Québec, Canada.
- ‘‘Optimal Spline Collocation on Adaptive Grids’’, *6th IMACS International Symposium on Iterative Methods in Scientific Computing*, March 27-30, 2003, University of Colorado at Denver, Denver, CO, U.S.A.

- ''Fast Fourier Transform Solvers and Preconditioners for Quadratic Spline Collocation'', *Workshop on Numerical Linear Algebra in Scientific and Engineering Applications*, October 29 - November 2, 2001, The Fields Institute for Mathematical Sciences, Toronto, Ontario, Canada, and *5th IMACS conference on iterative methods*, May 28-31, 2001, Heraklion, Greece.
- ''Some recent work on optimal spline collocation methods'', *Scientific Computing and Differential Equations (SciCaDE01) conference*, July 29 - August 3, 2001, Vancouver, British Columbia, Canada, poster presentation.
- ''Fast Fourier Transform Solvers and Preconditioners for Quadratic Spline Collocation'', *IMACS conference on iterative methods in scientific computing*, May 28-31, 2001, Heraklion, Crete, Greece.
- ''Fast Solvers for Quadratic Spline Collocation Equations'', *International Conference on Numerical Mathematics*, August 9-12, 2000, Lund University, Lund, Sweden.
- ''Fast Solvers for Quadratic Spline Collocation Equations'', *Canadian Applied and Industrial Mathematics Society Annual Meeting*, June 10-13, 2000, McMaster University, Hamilton, Ontario, Canada.
- ''An efficient transposition algorithm for distributed memory computers with an application to the shallow-water equations'', *8th Workshop on the Solution of Partial Differential Equations on the Sphere*, November 30 - December 3, 1999, San Francisco, California, U.S.A.
- ''Fast Direct and Iterative Solvers for Spline Collocation Equations'', *Hellenic European Research in Mathematics and InformaticS (HERMIS)* conference, September 26-28, 1996, Athens, Greece.
- ''Multigrid Methods for Quadratic Spline Collocation'', 13th Southern Ontario Numerical Analysis Day, *University of Waterloo,* May 12, 1995, Waterloo, Ontario, Canada.
- ''Schwarz and Multilevel Methods for Quadratic Spline Collocation'', *Colorado Conference on Iterative Methods*, April 5-9, 1994, Breckenridge, CO, U.S.A..
- ''Convergence of quadratic spline collocation on the union of rectangular subdomains'', *International Conference on Scientific Computation and Differential Equations (SCADE '93)*, January 4-9, 1993, Auckland, New Zealand.
- ''Preconditioners for Spline Collocation Equations'', *Copper Mountain Conference on Iterative Methods*, April 9-14, 1992, Copper Mountain, CO, U.S.A.
- ''Some methods for the parallel computation of elliptic equations'', the *Eighth Parallel Circus*, October 26-27, 1990, Toronto, Ontario, Canada.
- ''Quadratic spline collocation methods'', *SIAM 1986 National Meeting*, July 1986, Boston, MA, U.S.A.
- Publications [36], [37], [38], [39], [40], [41], [42] and [43] were presented by myself during the respective conferences.

Interview talks:

– ‘‘Domain Decomposition Methods for solving Elliptic PDEs on Hypercube Architectures’’, *University of Missouri-Columbia,* Columbia, MO, *Ohio State University,* Columbus, OH, *University of Toronto,* Toronto, *Rutgers University,* New Brunswick, NJ, *University of Colorado at Colorado Springs,* Colorado Springs, CO, *University of Minnesota,* Minneapolis, MN, March/April/May 1988.

Conference contributions by supervised students or PDFs:

My students made a number of contributions to conferences. I list contributions of the last 6 years only.

– Jienan Yao and Christina Christara, ‘‘Numerical PDE methods for a discontinuous diffusion problem with application to brain cancer growth’’, The 36th Southern Ontario Numerical Analysis Day, May 4, 2018, University of Toronto, Toronto, ON, Canada.
– Yuwei Chen and Christina Christara, ‘‘Valuing Two-Asset Options: Comparison between Numerical PDE and Analytical Approaches’’, Southern Ontario Numerical Analysis Day, May 19, 2017, McMaster University, Hamilton, Ontario, Canada.
– Jienan Yao and Christina Christara, ‘‘Numerical PDE Methods for Discontinuous Coefficient Problems: Application to Brain Cancer Growth’’, oral and poster presentations at the Undergraduate Summer Research Program, August 9 and September 8, 2017, Department of Computer Science, University of Toronto, Toronto, Ontario, Canada.
– Yuwei Chen and Christina Christara, ‘‘Valuing Two-Asset Options: Comparison between Numerical PDE and Analytical Approaches’’, Undergraduate Summer Research Program, Mentor’s Presentation, June 14, 2017, Department of Computer Science, University of Toronto, Toronto, Ontario, Canada.
– Nat Chun-Ho Leung, ‘‘Swap rates and swaption valuation under GARCH volatility’’, Canadian Applied and Industrial Mathematics Society (CAIMS) annual meeting, June 26-30, 2016, University of Alberta, Edmonton, AB, Canada.
– Nat Chun-Ho Leung and Christina Christara, ‘‘PDE pricing under stochastic correlation’’, Southern Ontario Numerical Analysis Day, University of Waterloo, May 27, 2016, Waterloo, ON, Canada.
– Nat Chun-Ho Leung and Christina Christara, ‘‘PDE option pricing with stochastic correlations’’, Research In Action (RIA), March 10, 2016, University of Toronto, Toronto, Ontario, Canada. (poster presentation by my student Nat Chun-Ho Leung)
– Chun Ho (Nat) Leung and Christina Christara, ‘‘Option pricing in jump diffusion models with quadratic spline collocation’’, CAIMS Annual Meeting, June 22-26, 2014, Saskatoon, SK, Canada.
– Vida Heidarpour-Dehkordi and Christina Christara, ‘‘ADE and ADI methods for Parabolic PDEs’’, CAIMS Annual Meeting, June 22-26, 2014, Saskatoon, SK, Canada.
– Vida Heidarpour-Dehkordi and Christina Christara, ‘‘ADE and ADI methods for Parabolic PDEs’’, Southern Ontario Numerical Analysis Day, York University, May 15, 2014, Toronto, Ontario, Canada.
– Chun Ho (Nat) Leung and Christina Christara, ‘‘Option pricing with quadratic spline collocation when the underlying asset follows a jump diffusion process’’, Southern Ontario Numerical Analysis Day, University of Ontario Institute of Technology (UOIT), May 3, 2013, Oshawa, Ontario, Canada.
– Chun Ho (Nat) Leung ‘‘Stress Free Flow over a Differentially Heated Rotating Sphere’’, 24th Canadian Congress of Applied Mechanics, June 2-6, 2013, Saskatoon, SK, Canada.

Teaching and supervising contributions (with list of courses)

Undergraduate and graduate courses taught:

- CSC260 Introduction to Scientific, Symbolic and Graphical Computation (2008F, 2006F, 2005F, 2004F, 2002S, 2001S)
- CSC350 Numerical Linear Algebra and Optimisation (2013F, 2012F, 2011F, 1999F, 1994F, 1993F, 1992F, 1991F, 1990F, 1989F, 1988F)
- CSC351 Numerical Approximation, Integration and Ordinary Differential Equations (2009S, 2008S, 2007S, 2006S, 2005S, 2004S, 1999S, 1998S, 1997S, 1995S, 1994S)
- CSC336 Numerical Methods (2019S, 2017S, 2016S, 2015S, 2014S, 2013S, 2012S, 2008S, 1994S, 1992S, 1991S)
- CSC436, Numerical Algorithms (2018F, 2016F, 2015F, 2014F)
- CSC446-2310 Computational Methods for Partial Differential Equations (2009S, 2005S, 2000S, 1998S, 1997S, 1995S, 1993S, 1992S, 1991S, 1990S, 1989S)
- CSC456-2306 High Performance Scientific Computing (2018F, 2015F, 2013F, 2012F, 2006F, 2003F, 2001F, 2000F, 1998F, 1997F, 1996F, 1994F)
- CSC2326 Special Topics in Numerical Analsysis: Parallel Computation (1992F, 1991F, 1989F)
- CSC2321 Matrix Calculations (2016F, 2014F, 2011F, 2007F, 2005F, 2004S, 2001S, 1999S, 1996F, 1993F, 1990F)
- CSC2321 Numerical Linear Algebra, enhanced version of CSC2321 (2001F), given at the Fields Institute of Mathematical Sciences
- Computational Methods for Partial Differential Equations, short no-credit (informal) graduate course (2003F)
- Introduction to Spline Collocation, no-credit (informal) graduate course (2007F)
- Research Project Courses (CSC494 summer 2014 - 5 students, CSC494 summer 2012 - 1 student, MAT497 summer 2005 - 1 student, CSC494 fall 2004 - 2 students, CSC494 summer 2004 - 1 student)

Supervised student theses (completed -- primary supervision):

Career student numbers:

	in progress	complete
Undergraduate (thesis)	0	1
Masters	1	14
Ph.D.	2	5
Post-Doctoral Fellows	0	6

T1. Yuwei Chen, ‘‘Numerical Methods for Pricing Multi-Asset Options’’, *M.Sc. thesis, University of Toronto,* Toronto, Ontario, Canada, January 2018, 75 pages.

T2. Nat Chun-Ho Leung, ‘‘PDE option pricing: analysis and application to stochastic correlation’’, *Ph.D. thesis, University of Toronto,* Toronto, Ontario, Canada, June 2017, 119 pages.

T3. Mufan (Bill) Li, ‘‘Efficient and accurate numerical PDE methods for pricing financial derivatives’’, *B.A.Sc. thesis, University of Toronto,* Toronto, Ontario, Canada, April 2015, 35 pages.

T4. Duy Minh Dang, ‘‘Modeling multi-factor financial derivatives by a Partial Differential Equation approach with efficient implementation on Graphics Processing Units’’, *Ph.D. thesis, University of Toronto,* Toronto, Ontario, Canada, August 2011, 228 pages.

T5. Tina Siu Yee, ‘‘A study of a discrete element method based granular dynamics solver’’, *M.Sc. thesis, University of Toronto,* Toronto, Ontario, Canada, September 2009, 43 pages.

T6. Guoyu Wang, ‘‘Multigrid and Spline Collocation Methods on Non-uniform Grids’’, *M.Sc. thesis, University of Toronto,* Toronto, Ontario, Canada, September 2008, 98 pages.

T7. Jingrui Zhang, ‘‘Bi-quartic Spline Collocation Methods for Fourth-order Boundary Value Problems with an Application to the Biharmonic Dirichlet Problem’’, *Ph.D. thesis, University of Toronto,* Toronto, Ontario, Canada, January 2008, 160 pages.

T8. Duy Minh Dang, ‘‘Adaptive finite difference methods for valuing American options’’, *M.Sc. thesis, University of Toronto,* Toronto, Ontario, Canada, September 2007, 119 pages.

T9. Guohong Liu, ‘‘Quartic Spline Collocation Methods For Second-Order Two-Point Boundary Value ODE Problems’’, *M.Sc. thesis, University of Toronto,* Toronto, Ontario, Canada, August 2007, 120 pages.

T10. Qingkai Mo, ‘‘Pricing Convertible Bonds with Dividend Protection subject to Credit Risk Using a Numerical PDE Approach’’, *M.Sc. thesis, University of Toronto,* Toronto, Ontario, Canada, April 2006, 92 pages.

T11. Tong Chen, ‘‘An Efficient Algorithm Based on Quadratic Spline Collocation and Finite Difference Methods for Parabolic PDEs’’, *M.Sc. thesis, University of Toronto,* Toronto, Ontario, Canada, September 2005, 92 pages.

T12. Lucy Xingwen Li, ‘‘Pricing Convertible Bonds Using Partial Differential Equations’’, *M.Sc. thesis, University of Toronto,* Toronto, Ontario, Canada, September 2005, 81 pages.

T13. Kit Sun Ng, ‘‘Spline Collocation on Adaptive Grids and Non-Rectangular Domains’’, *Ph.D. thesis, University of Toronto,* Toronto, Ontario, Canada, June 2005, 187 pages.

T14. Zheng Zeng, ‘‘Multigrid and Cubic Spline Collocation Methods for Advection Equations’’, *M.Sc. thesis, University of Toronto,* Toronto, Ontario, Canada, April 2005, 111 pages.

T15. Jingrui Zhang, ‘‘Towards a high-performance solver for the biharmonic Dirichlet problem’’, *Research Paper (equivalent to M.Sc. thesis), University of Toronto,* Toronto, Ontario, Canada, April 2004, 77 pages.

T16. Anita Tam, ‘‘High Order Spatial Discretization Methods for the Shallow-Water Equations’’, *Ph.D. thesis, University of Toronto,* Toronto, Ontario, Canada, February 2001, 160 pages.

T17. Ying Zhu, ‘‘Quartic Spline Collocation Methods for Fourth-order Two-point Boundary Value Problems’’, *M.Sc. thesis, University of Toronto,* Toronto, Ontario, Canada, April 2001, 73 pages.

T18. Kit Sun Ng, ‘‘Quadratic Spline Collocation Methods for Systems of Elliptic PDEs’’, *M.Sc. thesis, University of Toronto,* Toronto, Ontario, Canada, April 2000, 67 pages.

T19. Xiaoliang Ding, ‘‘Numerical Solution of the Shallow-Water Equations on Distributed Systems’’, *M.Sc. thesis, University of Toronto,* Toronto, Ontario, Canada, October 1998, 73 pages.

T20. Athanasia Constas, ‘‘Fast Fourier Transform Solvers for Quadratic Spline Collocation Equations’’, *M.Sc. thesis, University of Toronto,* Toronto, Ontario, Canada, July 1996, 64 pages.

Current theses supervision -- primary:

Student Name	*Title (or tentative title)*	*Level*	*Status*	*Dates*
Yuwei Chen	Numerical and asymptotic PDE methods for pricing bilateral default risk	Ph.D.	S	18-
Chao Yang	Counterparty risk valuation via a PDE approach	M.Sc.	S	14-
Vida Heidarpour-Dehkordi	Numerical PDE Methods for Spread Option Pricing	Ph.D.	RP	12-

Other theses supervision -- secondary:

Student Name	*Title (or tentative title)*	*Level*	*Status*	*Dates*
Luiz Tobaldini Neto (Aerospace Eng)	High-Order Finite-Volume CENO Scheme for Large-Eddy Simulation of Premixed Flames	Ph.D.	G	18-19
Michael Chiu	Correlated Multivariate Point Processes	Ph.D.	TP	14-
Jonathan Calver	Parameter estimation for systems of Ordinary Differential Equations	Ph.D.	G	14-19
Seyed Amir Hejazi	A neural network approach to efficient valuation of large VA portfolios	Ph.D.	G	14-16
Samir Hamdi	Taylor series solutions to delay differential equations	Ph.D.	MSP	13-
Mohammad Shakourifar	Reliable approximate solution of systems of Volterra integro-differential equations	Ph.D.	G	07-12
Nargol Rezvani Dehaghani	Reconstruction algorithms in Computerized Tomography	Ph.D.	G	06-12
John Gatsis (Aerospace Eng)	Preconditioning techniques for a Newton-Krylov algorithm for the compressible Navier-Stokes equations	Ph.D.	G	08-13
Dongwoon Lee	Reliable quantification and reconstruction of muscle architecture	Ph.D.	G	06-15
Chris Pinciuc (Electr&Comp. Eng)	Basis functions with divergence constraints for the Finite Element Method	Ph.D.	G	11-12
Hossein Zivari Piran	Efficient simulation, accurate sensitivity analysis and reliable parameter estimation for delay differential equations	Ph.D.	G	06-09
Vladimir Surkov	Option pricing using	Ph.D.	G	05-09

	Fourier space time-stepping framework			
Hassan Goldani Moghaddam	Applications of generic interpolants in the investigation and visualization of approximate solutions of PDEs on coarse unstructured meshes	Ph.D.	G	05-09
Elisabeth Lam	The sparse grid and combination technique methods for parabolic PDEs	Ph.D.	DO	05-
Lifang Wang	Modeling and Simulation of Carrier Transport in Optoelectronic Devices	Ph.D.	DO	03-
Khosro Shahbazi (Mech&Ind. Eng)	A Parallel High-Order Discontinuous Galerkin Solver for Unsteady Incompressible Navier-Stokes Equations in Complex Geometries	Ph.D.	G	03-07
Edward Xia	Optimal Grid Scheduling by Dynamic Selection of Scheduling Euristics	Ph.D.	G	03-07
Uyen Trang Nguyen	Congestion Control for Multipoint Communications in ATM Networks	Ph.D.	G	02-03
Xiaofang Ma	Computation of the Probability Density Function and the Cumulative Distribution Function of the Generalized Gamma Variance Model	Ph.D.	G	01-06
Pascal Poupart	Exploiting Structure to Efficiently Solve Large Scale Partially Observable Markov Decision Processes	Ph.D.	G	00-05
Ned Nedialkov	On Validated Solutions of Initial Value Problems for Ordinary Differential Equations	Ph.D.	G	96-00
Craig MacDonald	A new approach for Differential Algebraic Equations	Ph.D.	G	94-00
Jianwen Yang (Physics)	Numerical Simulation of Hydrothermal Convection within Discretely Fractured Porous Media with Application to the Seafloor (Senate Defence)	Ph.D.	G	96
Dattatraya Kulkarni	Computation Decomposition and Alignment	Ph.D.	G	93-97
Richard Pancer	The Parallel Solution of ABD Systems arising in Numerical Methods for BVPs for ODEs	Ph.D.	G	91-06
Hiroshi Hayashi	Numerical Solution for Delay Differential Equations	Ph.D.	G	91-96
Robert Enenkel	Parallel IVP-ODE Solvers	Ph.D.	G	90-96
Hui Li	Scheduling in Multiprogrammed Multiprocessors	Ph.D.	G	90-95
George Drettakis	Structured Sampling and Reconstruction of Illumination for Image Synthesis	Ph.D.	G	90-94
Luiz Velho	Piecewise Descriptions of Implicit Surfaces and Solids	Ph.D.	G	90-94
Tim Brecht	Processor Scheduling in Large Scale Shared Memory Multiprocessors	Ph.D.	G	90-94
Tom Fairgrieve	Periodic Solutions of Autonomous, Nonlinear ODEs	Ph.D.	G	90-94
Vince Canale	The Computation of Paths of Homoclinic Orbits	Ph.D.	G	90-94
Mark Giesbrecht	Nearly Optimal Algorithms for Canonical Matrix Forms	Ph.D.	G	90-92
Hung Nguyen	Towards the Numerical Solution of Differential Algebraic Equations by RK Methods	Ph.D.	G	89-95
Jonathan Calver	Improving a cross-entropy approach	M.Sc.	G	12-14

	to parameter estimation for ODEs and DDEs			
Bo Wang	Parameter estimation for ODEs using a cross-entropy approach	M.Sc.	G	10-12
Kante Easley	Energy-based error control strategies suitable for long MD simulations	M.Sc.	G	07-10
Yan Li	Robust and reliable defect control for Runge-Kutta methods	M.Sc.	G	05-07
Dongyi Li	On Convergence of Numerical Methods for Pricing Convertible Bonds	M.Sc.	G	05-07
Zhong Wang	Fast Waveform Evaluation of Logic Stages by Piecewise Quadratic Waveform Matching	M.A.Sc.	G	02-03
Ramos Gonzales	Scattered Data Interpolation Using an Alternate Differential Equation Interpolant	M.Sc.	G	00-01
Zhong Ge	A Numerical Study of One-Factor Interest Rate Models	M.Sc.	G	96-98

Notes:
The ''*Status*'' column indicates whether the student has *graduated* (G), passed the *departmental thesis defence* exam (TD), the *thesis proposal* exam (TP), the *research proposal* exam (RP), the *depth oral* exam (DO), the *research paper* (MSP, equivalent to M.Sc. thesis), or has just started graduate studies (S). Progress steps MSP, DO, RP, TP and TD refer to Ph.D. students only.
The ''*date*'' column indicates period of supervision by me (and not necessarily the period the student was registered).

Other supervision (postdoctoral level):

- Secondary advisor of Dr. Konstantin Latychev, currently a research associate in the Physics Department at UofT, on a project on domain decomposition methods for solving a system of three-dimensional PDEs, modelling and simulating the development and movement of tectonic plaques, 2001-2006.
- Our Numerical Analysis group in the department typically shares the cost of postdoctoral fellows and research associates and jointly supervises them. I have contributed a small share in the cost and supervision of the following postdoctoral fellows in the past years:
  Israel Nelken, employed by Harris Bank, Chicago, then director of Super Computer Consulting, Inc.
  Bryn Owren, currently professor in Trondheim, Norway.
  Min Hu, employed by Comnetix Computer Systems, Toronto.
  Tom Fairgrieve, currently faculty member, teaching stream, at the University of Toronto.
  Hiroshi Hayashi, lecturer at Brock University, St. Catherines, Ontario, Canada.
  Sigitas Keras, employed by Algorithmics, then by CIBC, Toronto.

Other project supervision:

S1. Supervisor of the research project by undergraduate student Jienan Yao, from the Department of Computer Science, May to August 2017. The project was titled ''Numerical PDE methods for discontinuous coefficients problems: application to brain cancer growth'', and was funded by UTEA (University of Toronto Excellence Award).

S2. Supervisor of the research project by M.Sc.A.C. student Yixing Zhang, from the Department of Computer Science, January to April 2017. The project (without credit or funding) was titled ‘‘Numerical PDE methods for pricing multi-asset options’’.

S3. Supervisor of the research project by undergraduate student Peiliang Guo, from the Department of Electrical Engineering, March to August 2015. The project was titled ‘‘A study of accuracy and efficiency of numerical PDE methods for pricing Asian options’’, and was funded by NSERC USRA (undergraduate student research award).

S4. Supervisor of the research project by undergraduate student Roman Garkusha, from the Department of Computer Science, May to August 2014. The project was titled ‘‘High-order finite difference methods for pricing discrete Asian options’’.

S5. Supervisor of the research project by undergraduate student Yang Fan, from the Department of Computer Science, May to August 2014. The project was titled ‘‘Discrete and continuous penalty methods for American options’’.

S6. Supervisor of the research project by undergraduate student Ruoqi Yu, from the Department of Statistics, May to August 2014. The project was titled ‘‘High-order finite difference methods for European options’’.

S7. Supervisor of the research project by undergraduate student Yuxin Zhou, from the Department of Statistics, May to August 2014. The project was titled ‘‘High-order finite difference methods for American options’’.

S8. Supervisor of the research project by undergraduate student Yiqin Chen, from the Department of Statistics, May to August 2014. The project was titled ‘‘Projected SOR methods for pricing American options’’.

S9. Supervisor of the research project by undergraduate student Yu Wu, from the Department of Electrical Engineering, February to August 2013. The project was titled ‘‘Penalty methods for PDE pricing of American options’’, and was funded by NSERC USRA (undergraduate student research award).

S10. Supervisor of the research project by undergraduate student Linpan Li, from the Department of Electrical Engineering, February to August 2013. The project was titled ‘‘Pricing American options with transaction costs’’, and was funded by UTEA (University of Toronto Excellence Award).

S11. Supervisor of the research project by undergraduate student Pedram Adibi, from the Department of Computer Science, May to August 2012. The project was titled ‘‘Numerical PDE methods for American options’’.

S12. Supervisor of the research project by undergraduate student Zhe Wang, from the Department of Computer Science, May to August 2011. The project (without credit or funding) was titled ‘‘PDEs for computational finance’’.

S13. Co-supervisor of the research project by undergraduate student Adrian Dalca from the Department of Computer Science, April to May 2007. The project titled ‘‘Introduction to numerical methods for PDEs’’ was funded by NSERC USRA (undergraduate student research award).

S14. Supervisor of the research project by undergraduate student Duy Minh Dang from the Department of Computer Science, May to August 2005. The project titled ‘‘Adaptive spatial meshing techniques for European Options’’ was funded by NSERC USRA (undergraduate student research award).

S15. Supervisor of the research project by undergraduate student Aamir Mohammed, from the Department of Mathematics, June to August 2005. The project was titled ‘‘Numerical methods for swing options’’.

S16. Supervisor of the research project by undergraduate student Duy Minh Dang from the Department of Computer Science, June to August 2004. The project was titled ‘‘Numerical methods for American options’’.

S17. Supervisor of the research project by undergraduate student Minghao Lu, from the Department of Computer Science, September to December 2004. The project was titled ‘‘Pricing options with discrete and continuous dividends’’.

S18. Supervisor of the research project by undergraduate student Hai Zhang, from the Department of Computer Science, September to December 2004. The project was titled ‘‘Binomial methods for option pricing’’.

S19. Supervisor of the research project by undergraduate student Victor Glazer, from the Department of Computer Science, May to August 2003. The project was titled ‘‘High-Order Shape-Preserving Spline Interpolation’’, and was funded by NSERC USRA (undergraduate student research award).

S20. Supervisor of the project by undergraduate student Winky Wai, from the Department of Computer Science, June to August 1992. The project involved the development of software for the use of the state-of-the-art computer systems of the Department of Computer Science by students. Funded by NSERC USRA (undergraduate student research award).

S21. Supervisor of the research project by graduate student Guangyu Wu, from the Civil Engineering Department, May 1991 to April 1992. The project was titled ‘‘three-dimensional collocation for elliptic partial differential equations’’.

Administrative positions

Committees served within the University:

Year	*Committee*
2018-19	DCS graduate affairs committee
	SGS orals committee
2016-17	NSERC RTI DCS representative
	Professional Masters admissions
	SGS orals committee
2015-16	DCS graduate affairs committee
	NSERC RTI DCS representative
	SGS orals committee
2014-15	DCS graduate affairs committee
	Chair of DCS SGS orals committee
2013-14	DCS graduate admissions committee
	DCS graduate affairs committee
	Chair of DCS SGS orals committee
2012-13	DCS graduate admissions committee
	Chair of DCS SGS orals committee
2011-12	DCS graduate admissions committee
	Chair of DCS SGS orals committee
2008-09	DCS Grad Affairs committee Chair
	DCS breadth evaluation committee
2007-08	OGS (Ontario Graduate Scholarship) Panel Chair
	DCS teaching awards committee
	DCS cross and status only appointments committee
	DCS time pressure working group
2006-07	DCS graduate admissions committee
	DCS committee for ranking OGSST and internal awards applications
2005-06	OGS (Ontario Graduate Scholarship) Panel Chair
	DCS graduate admissions committee
	DCS committee for ranking NSERC and OGS applications
2004-05	OGS (Ontario Graduate Scholarship) Panel Chair
	DCS graduate admissions committee
	committee for the review of senior lecturer promotion application
	DCS committee for ranking NSERC and OGS applications
2003-04	OGS (Ontario Graduate Scholarship) Panel Chair
	DCS elections committee (for the faculty advisory committee)
	ECE graduate planning committee
2002-03	OGS (Ontario Graduate Scholarship) Panel Chair
	ECE computer and communications faculty recruitment committee
2001-02	OGS (Ontario Graduate Scholarship) Panel Chair
	DCS breadth committee

DCS Undergraduate Committee
DCS Undergraduate Advisory Program

2000-01 Dean’s representative in the search committee for the Teck Chair in Exploration Geophysics
DCS Undergraduate Advisory Program

1999-00 graduate coordinator of DCS (3 months)
DCS Undergraduate Advisory Program

1998-99 graduate coordinator of DCS
DCS graduate admissions committee
DCS Environment Counselor

1997-98 graduate coordinator of DCS
DCS graduate admissions committee
DCS Undergraduate Advisory Program

1996-97 chair of the DCS graduate committee
DCS Ph.D. admissions committee
DCS committee on proposing a "professional M.Sc." program
DCS Undergraduate Advisory Program

1994-95 chair of the DCS graduate committee
DCS Ph.D. admissions committee
DCS Numerical Analysis seminar coordinator
Computer Science Laboratory committee
DCS Undergraduate Advisory Program

1993-94 DCS Numerical Analysis seminar coordinator
DCS M.Sc. Admissions Committee
DCS Undergraduate Advisory Program

1992-93 DCS Numerical Analysis seminar coordinator
DCS M.Sc. Admissions Committee
DCS Undergraduate Advisory Program

1991-92 DCS Numerical Analysis seminar coordinator
DCS Environment Counselor
DCS Library Committee
DCS Undergraduate Advisory Program

1990-91 A&S General Committee
DCS Numerical Analysis seminar coordinator
DCS Recruitment Committee
CDF Upgrade Committee
DCS Environment Counselor
DCS Undergraduate Advisory Program
C. C. Gotlieb Committee for the upgrade of the Ont. Centre for Large Scale Comp. (OCLSC)
Organising Committee for the eighth Parallel Circus, October 1990, Toronto, Canada.

1989-90 DCS Graduate Committee
DCS Undergraduate Advisory Program
A&S General Committee

Notes: DCS: Department of Computer Science, A&S: Faculty of Arts and Science, U. of Toronto.

Other service within the University:

- Invited to participate in the panel discussion organized by the Women in Computer Science Club of the University of Toronto, about how to inspire more women coming into the field of computer science. The discussion took place on September 29, 2017, room BA B024, UT. The panel included, besides myself, another two faculty members, two Ph.D. students in CS, and three women from the industry.
- I volunteered to be a mentor for two graduate students in 2016-17, 2017-18 and 2018-19. Mentoring involves meeting with the student, advising on academic, career, personal or other matters.
- Invited to participate in the panel discussion organized by the Undergraduate Math Union of the University of Toronto, about the interaction between Computer Science and Mathematics. The discussion took place on February 4, 2011, room BA1190, UT. The panel included, besides myself, another two faculty members and the audience were undergraduate Mathematics students.
- Volunteer mentor in the women mentoring program, coordinated by the Status of Women Office at the University of Toronto, 2003-2004. In this program, female faculty members volunteer to serve as mentors for female UT students who apply to the program. Mentoring involves meeting with the mentee, advising on academic, career, personal or other matters, participating in related events, etc.
- I was the advisor of the ACM University of Toronto student chapter, 1997-2000.
- Chair of several School of Graduate Studies senate defences.
- I developed and now contribute to the maintenance of the Numerical Analysis ftp site at the department of Computer Science, University of Toronto, located at `http://www.cs.toronto.edu/NA` (formerly in `http://www.cs.toronto.edu/~ftp/na`) including the technical report site in `http://www.cs.toronto.edu/NA/reports.html`.

Editorial boards:

See first page: Professional Affiliations and Activities.

Program committee memberships / Conference and seminar organization / Editing of proceedings:

Note: As conference organizer or co-organizer, besides making local arrangements and/or inviting speakers, I also review abstracts and contribute in the formulation of the conference program. As member of program committees, I review complete papers and/or assign papers to reviewers, as well as contribute in the formulation of the conference program.

- Organizer (with Ken Jackson and Tom Fairgrieve) of the 36th Southern Ontario Numerical Analysis Day, an one-day conference with about 85 participants, May 4, 2018, University of Toronto, Toronto, ON, Canada.
- Editor (with one more person) of the proceedings of the International Conference on Computational and Informational Sciences and Engineering, honouring Professor Elias N. Houstis, University of Thessaly publications, published September 2018.
- Organizer of the minisymposium "Diverse Problems in Scientific Computing", at the 20th IMACS World Congress, December 11-15, 2016, Xiamen, China. The minisymposium had four talks (one talk by myself).

- Chair of the program committee of the International Conference on Computational and Informational Sciences and Engineering, honouring Professor Elias N. Houstis, June 21-24, 2016, Portaria, Volos, Greece.
- Organizer of the minisymposium ‘‘Computational Models and Methods in Quantitative Finance’’, at the 19th IMACS World Congress, August 26-30, 2013, Real Centro Universitario El Escorial-Maria Cristina, El Escorial, Spain. The minisymposium had four talks (one talk by myself).
- Co-organizer (with Peter A. Forsyth and Dong Liang) of the minisymposium ‘‘Advanced Numerical Methods for PDEs and Applications’’, at the International Conference on Applied Mathematics, Modeling and Computational Science (AMMCS-2013), August 26-30, 2013, Waterloo, Ontario, Canada.
  The minisymposium had twelve (12) talks (no talk by myself).
- Co-organizer (with Paul Muir) of the minisymposium ‘‘Recent Advances in Computational Methods for PDEs with Applications’’, at the CAIMS Annual Meeting, June 24-28, 2012, Fields Institute in Toronto, Toronto, Ontario, Canada. The minisymposium had four talks (no talk by myself).
- Co-organizer (with Adam Metzler) of the minisymposia ‘‘MS27 Mathematical Finance I: Computational Models and Methods’’ and ‘‘MS78 Mathematical Finance II: Computational Models and Methods’’, at the International Congress for Industrial and Applied Mathematics (ICIAM11), July 17-22, 2011, Vancouver Convention Centre, Canada. Each minisymposium had four talks (no talks by the organizers).
- Member of the programme committee and co-organizer of the Conference in Numerical Analysis (NumAn10), September 15-18, 2010, Chania, Greece.
- Co-organizer of the Conference on the Effective Use of High Performance Workstations In Scientific Computing, August 4-6, 2008, University of Toronto. The primary organizer was Wayne Enright.
- Organizer of the minisymposium Spline Collocation and Differential Equations: more than you wanted to know, but less than can be said; speakers: Graeme Fairweather (Colorado School of Mines), Paul Muir (St. Mary’s), Robert Russell (Simon Fraser) and myself; Canadian Applied and Industrial Mathematics Society (CAIMS) annual meeting, May 20-24, 2007, Banff, Alberta, Canada.
- Chair of the 7th IMACS International Symposium on Iterative Methods in Scientific Computing, May 5-8, 2005, University of Toronto and the Fields Institute, Toronto, Ontario, Canada.
- Member of the program committee of the above conference.
- Member of the program committee of the 8th IMACS International Symposium on Iterative Methods in Scientific Computing, Texas A&M University, November 14-17, 2006, College Station, TX, U.S.A.
- Member of the program committee of the 18th High Performance Computing Symposium (HPCS 2004), May 16-19, 2004, Winnipeg, Manitoba, Canada.
- Member of the program committee of the 6th IMACS International Symposium on Iterative Methods in Scientific Computing, University of Colorado at Denver, March 27-30, 2003, Denver, CO, U.S.A.
- Member of the program committee of the 17th High Performance Computing Symposium (HPCS 2003), May 11-14, 2003, Sherbrooke, Québec, Canada.
- Member of the program committee of the 16th Annual International Symposium on High Performance Computing Systems and Applications (HPCS 2002), June 17-19, 2002, Moncton, New Brunswick, Canada.

- Helped in organizing the 24th Southern Ontario Numerical Analysis Day 2006, an one-day conference with about 65 participants, held by the department of Computer Science, University of Toronto, Friday 5 May 2006. I set-up the web site `http://www.cs.toronto.edu/~ccc/NAday06/`, and communicated announcements.
- Co-organizer (with Ken Jackson) of the 15th Southern Numerical Analysis Day, an one-day conference with about 65 participants, held by the department of Computer Science, University of Toronto, April 30, 1997.
  I also developed the web-site for the above conference, now found in `http://www.cs.toronto.edu/~ftp/na/na.day.97/index.html`.
- Co-organizer (with Ken Jackson and Tom Fairgrieve) of the 12th Southern Numerical Analysis Day, an one-day conference with about 80 participants, held by the department of Computer Science, University of Toronto, April 15, 1994.
- Co-organizer (with Ken Jackson and Israel Nelken) of the 8th Parallel Circus, an one-day conference with about 90 participants, held by the department of Computer Science, University of Toronto, October 1990.
- During the years 1990-1995 I served as the organizer of the Numerical Analysis seminars at the Department of Computer Science, University of Toronto.

Paper refereeing:

- Refereed several research papers for the following scientific journals or specialty conference proceedings: (1) IMA Journal of Numerical Analysis, (2) SIAM J. of Numer. Anal., (3) SIAM J. of Sci. Comput., (4) ACM Transactions on Mathematical Software (TOMS), (5) BIT, (6) IEEE Transactions on Parallel and Distributed Systems, (7) Applied Numerical Mathematics, (8) Applied Mathematics and Computation, (9) Applied Mathematics Letters, (10) Advances in Computational Mathematics, (11) Computers and Mathematics With Applications, (12) Computer Methods in Applied Mechanics and Engineering, (13) International Journal of Computer Mathematics, (14) International Journal of Theoretical and Applied Finance, (15) Journal of Computational and Applied Mathematics, (16) Journal of Finite Elements in Analysis and Design, (17) Journal of Numerical Linear Algebra, (18) Journal on Boundary Value Problems (Hindawi publishing corp.), (19) Journal of Computational Finance, (20) Journal of Computational Physics, (21) Journal of Mathematical Analysis and Applications, (22) Journal of Parallel and Distributed Computing, (23) Mathematics and Computers in Simulation, (24) Mathematical and Computer Modelling, (25) Mathematical Modelling and Analysis, (26) Mathematics in Science and Industry (MSI) run by CAIMS, (27) Numerical Algorithms, (28) Numerical Linear Algebra with Applications, (29) Numerical Methods for Partial Differential Equations, (30) Symmetry, (31) the IEEE International Symposium on Circuits and Systems (ISCAS), (32) the International Conference on Supercomputing, (33) the International Conference on Parallel Processing, (34) the Fourth IEEE Symposium on Parallel and Distributed Processing, (35) the International Symposium on High Performance Computing Systems and Applications, 1999-2004, (36) the 6th IMACS International Symposium on Iterative Methods in Scientific Computing, and (37) the 7th IMACS International Symposium on Iterative Methods in Scientific Computing. (38) the 8th IMACS International Symposium on Iterative Methods in Scientific Computing, (39) International Conference on Distributed Computing and Networking 2006, (40) Conference in Numerical Analysis (NumAn10) 2010, (41) the International Conference on Computational and Informational Sciences and Engineering 2016.

Refereed books submitted to Cambridge Publishers, Wiley, and Bentham Science.

Proposal and award refereeing:

- I served as reviewer for an NSERC collaborative research and development (CRD) grant proposal.
- I served as reviewer for a CFI - Leaders Opportunity Fund - proposal.
- I served as reviewer for a Steacie Award nomination application.
- I served as primary reviewer of two National Institute of Health (U.S.A) proposal for the founding of the respective Bioinformatics Centers, and as secondary reviewer of another 19 such proposals; I participated in the review panel to select a small number of these proposals.
- I served as reviewer of a Swiss National Science Foundation proposal.
- I served as reviewer of several NSERC proposals, and of a MITACS proposal.
- I served as reviewer of a conference organization proposal for the Fields Institute.

Promotion reviewing:

- Reviewer for Professor Angela Demkes's teaching dossier for promotion (with Sam Toueg), 2018-19.
- Reviewer for Professor Michelle Craig's teaching dossier for promotion (with Michael Brudno), 2018-19.

Tenure reviewing:

- External reviewer of Professor Michael Haslam's tenure and promotion application, at York University, Department of Mathematics and Statistics, 2010.
- External reviewer of Professor Dong Liang's tenure and promotion application, at York University, Department of Mathematics and Statistics, 2004.
- Member of DCS tenure review committees.

External examiner and related service:

- External examiner of M.Sc. candidate of Zhi Li, from the Department of Mathematics and Computing Science, Saint Mary's University, 2012. Thesis title ''B-spline Collocation for Two-Dimensional, Time-Dependent, Parabolic PDEs''.
- External examiner of Ph.D. candidate Qiang Guo, from York University, 2009. Thesis title ''Wavelet and Adaptive Methods for Time Dependent Problems and Applications in Aerosol Dynamics''.
- External examiner of Ph.D. candidate Amelie Belanger, from the University of Waterloo, 2008. Thesis title ''Numerical methods for long-term impulse control problems in finance''.
- Reader for the Ph.D. thesis of Jiawu Sun, from the Department of Mathematics, University of Saskatchewan, 1992. Thesis title ''a family of new C^0 - collocation finite elements''.

Other refereeing:

- Judge in the student poster competition during the CAIMS–MITACS 2006 Joint Annual Conference, June 16-20, 2006, York University, Toronto, Ontario.

Other relevant information

Contribution to public, high-school education, etc

- I gave one-and-a-half hour presentations (including questions) on ‘‘University Studies Orientation’’ at the Greek Program Schools of Toronto University Day, (organized by the Hellenic-Canadian Academic Association of Ontario), on Saturday, November 28, 2015, Saturday November 1, 2014, and Saturday October 27, 2012, East Commerce High-School, and GS Henry High-School, Toronto. The presentations targeted 11- and 12-grade high-school students, interested in university studies. Presented information on how to pick a program, how to apply, how to ask for financial aid, etc.
- I gave a lecture titled ‘‘A look at computing and computer science: the old, the new, and the Greek’’, at the Greek Students Association academic night, February 1, 2012, Hart House, University of Toronto.
- As a member and vice-president of the Hellenic-Canadian Academic Association of Ontario (HCAAO -- association of Ontario universities’ teachers of Greek descent), I co-organized and participated in the ‘‘University Studies Orientation Day’’, January 11, 2009, at the Polymenakeion Cultural Centre of the Greek Community of Toronto. In this three-hour event, HCAAO invites grade 11 and 12 students and their parents to an Ontario ‘‘University Fair’’, in which we provide students and their parents information about university studies, choice of programs and the application/admission procedure (undergraduate). The event was attended by about 30 students/parents, primarily of Greek descent, 15 professors, two school teachers/principals, and a few university administrators.
- I gave a short presentation on weather prediction to Global TV, on Thursday 14 December 2006. Described the main mathematical model (equations) used for weather prediction and the difficulties arising in solving them. The presentation was filmed in my office and was aired on Global TV news the same evening.
- I gave a two-hour lecture to high-school students, as part of "Computing Insights". These are lectures organized by the Department of Computer Science aiming in providing information about and attracting to Computer Science students.
- My Ph.D. student Nat Chun-Ho Leung and I participated in the Research In Action (RIA) showcase, March 10, 2016, University of Toronto. Nat Chun-Ho Leung gave a poster presentation on ‘‘PDE option pricing with stochastic correlations’’. This is an annual event in which the Department of Computer Science invites representatives of various industries of the greater Toronto area to inform them on research projects of potential interest.
- My Ph.D. student Duy Minh Dang made a presentation in the Research In Action (RIA) showcase, April 8, 2011, Department of Computer Science, University of Toronto.
- My Ph.D. student Duy Minh Dang made a presentation in the first annual DCS Graduate Symposium on Trends in Computing, May 19-20, 2010, Department of Computer Science, University of Toronto.
- My M.Sc. student Tina Siu Yee and I participated in the ‘‘Research in Action’’ showcase, March 24, 2009, 12-6 p.m., Department of Computer Science, University of Toronto. Tina Siu Yee gave a poster and movie presentation on ‘‘A Granular Dynamics Solver’’.

Relevance of work to engineering practice or industrial processes:

Many physical phenomena are modelled by PDEs, therefore, research into efficient numerical solution of PDEs has many engineering applications.
I have been involved in the following engineering applications: **(a)** weather forecasting, **(b)** structural mechanics (three-dimensional stress analysis), and **(c)** pricing of financial derivatives. All the above areas are strategically important having a direct impact on the economy and the development of other related fields of science. Because of their relative significance, they have motivated over the years the simultaneous development of several approaches in the field of scientific computation intended to optimize various aspects of the solution process (e.g. new discretization techniques, improved solvers including parallel processing algorithms).

Grants:

Agency	*Amount*	*Dates*	*Status*
NSERC operating	$ 18,000 per yr	2015-2020	held
NSERC operating	$ 25,000 per yr	2010-2015	expired
NSERC operating	$ 18,000 per yr	2005-2010	expired
NSERC operating	$ 17,000 per yr	2001-2005	expired
NSERC operating	$ 16,170 per yr	1997-2001	expired
NSERC operating	$ 12,500 per yr	1992-1995	expired
NSERC operating	$ 12,948 per yr	1990-1992	expired
CDF software development	$ 4,300	June-August 1992	expired
Connaught initiative	$ 10,000	1989-90	expired
Post-Doctoral Fellowship	$ 40,000	1988-89	expired
NSERC infrastructure (with 37 others)	$ 65,500	1997-98	expired
NSERC infrastructure (with 37 others)	$ 134,500	1996-97	expired
NSERC infrastructure (with 37 others)	$ 201,750	1995-96	expired
NSERC infrastructure (with 37 others)	$ 269,000	1994-95	expired
NSERC infrastructure (with 16 others)	$ 100,000	1992-94	expired
NSERC equipment (with 2 others)	$ 46,498	2012-14	expired
NSERC equipment (with 3 others)	$ 59,714	2007-09	expired
NSERC equipment (with 4 others)	$ 62,324	2003-04	expired
NSERC equipment (with 7 others)	$ 80,402	1999-00	expired
NSERC equipment (with 15 others)	$ 114,860	1996-97	expired
NSERC equipment	$ 123,593	1995-96	expired

(with 15 others)			
NSERC equipment	$ 105,042	1994-95	expired
(with 15 others)			
NSERC equipment	$ 131,388	1993-94	expired
(with 15 others)			
NSERC equipment	$ 58,970	1990-91	expired
(with 14 others)			
CITO/ITRC "Comp. Support for Modelling ..."	$ 90,000 per yr	1998-00	expired
(with 9 others)			
ITRC "Scientific Comp. Proj."	$ 75,000 per yr	1995-98	expired
(with 4 others)			
ITRC "Scientific Comp. Proj."	$ 76,000 per yr	1993-95	expired
(with 4 others)			
ITRC "Scientific Comp. Proj."	$ 90,000 per yr	1988-92	expired
(with 5 others)			

Fellowships:

1988-1989	Postdoctoral fellowship, University of Toronto
1987-1988	David Ross Grant, Purdue University (research fellowship awarded to outstanding students)
spring 1987	Research Assistantship, Purdue University
fall 1984-spring 1987	Teaching Assistantship, Purdue University
spring 1983-fall 1984	Post Bachelor Scholarship by the Greek government
1978-82	Scholarship by the Greek government

Memberships and Offices:

1991-	member of the Canadian Applied and Industrial Mathematics Society (CAIMS)
2000-	member of the International Association for Mathematics and Computers in Simulation (IMACS)
2016-	general secretary of the International Association for Mathematics and Computers in Simulation (IMACS)
2013-	member of the Board of the International Association for Mathematics and Computers in Simulation (IMACS)
2003-	member of the technical committee on Linear Algebra of IMACS
2009-	member of the Society of Industrial and Applied Mathematics (SIAM)
2013-2018	treasurer of the Hellenic Canadian Academic Association of Ontario
2007-2009	vice-president of the Hellenic Canadian Academic Association of Ontario
2006-2007	president of the Hellenic Canadian Academic Association of Ontario
2001-2006	treasurer of the Hellenic Canadian Academic Association of Ontario
1997-2001	president of the Hellenic Canadian Academic Association of Ontario
1996-1997	treasurer of the Hellenic Canadian Academic Association of Ontario
1991-	member of the Hellenic Canadian Academic Association of Ontario
1991-1994	founding member and secretary of the Hellenic Canadian Academic Association of Ontario
1992-1994	member of the governing council of the Pan-Macedonian Association of Ontario, Canada

1985- member of the Hellenic Mathematical Society
1987-1988 vice-president of the Hellenic Student Association of Purdue University
1985-1987 secretary of the above organization
1984-1988 member of the above organization

Languages:
Greek (native), English (fluent), French (reasonable), German (reasonable).