Curriculum Vitae

Abraham P. Punnen

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Surrey Campus

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Contents

General Information

Contact

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Citizenship:	Canadian
Religious background:	Christian.

Current position

> Professor, Operations Research,
> Department of Mathematics,
> Simon Fraser University, Surrey, BC.

Educational Background

In the table below, P. T. means professional Training.

Year	Degree	Subject	Institution
1975	High School		M.D. Seminary High School, Kottayam, Kerala, India.
1977	Pre-Degree	Physics, Chemistry, Mathematics	Church Mission Society (CMS) College, Kerala University, India
1981	B.Sc.	Mathematics, Statistics, Physics	Baselius College, Kerala University, India
1983	M.Sc.	Mathematics	Christ Church College, Kanpur University, India
1990	Ph.D	Operations Research	Indian Institute of Technology, Kanpur, India.
2009	P. T.	Administrative Justice: A course for decision makers in post secondary educational institutions	BC Council of Administrative Tribunals, Canada
2016	P. T.	Collaborative conflict resolution with workplace focus	Justice Institute, BC,Canada

Employment History

July 2005 - Current	Professor, Operations Research
	Simon Fraser University, Canada
July 2014 - 2023	Associate member, School of Computing Science
	Simon Fraser University
October 2018 - 2021	Adjunct Professor, School of Management
	Northwestern Polytechnical University, Xian, China
July 2006- July 2009	Director, Center for Operations Research
	and Decision Sciences, Simon Fraser University
July 2004 - June 2005	Director, Mathematics graduate programs
	University of New Brunswick, Canada
July 2000 - June 2005	Professor, Mathematics
	University of New Brunswick - Saint John, Canada
July 1996 - June 2000	Associate Professor, Mathematics
	University of New Brunswick - Saint John, Canada
July 1994 - June 1996	Assistant Professor, Mathematics,
	University of New Brunswick - Saint John, Canada
August 1993 - May 1994	Visiting Assistant Professor, Mathematics
	University of Colorado - Denver, USA
August 1992 - July 1993	Post-doctoral fellow, Faculty of Administration,
	University of New Brunswick - Fredericton, Canada
September 1991 - July 1992	Post-doctoral fellow, Business Administration,
	University of Windsor, Canada
October 1990 - June 1991	Visiting Assistant Professor, CORE
	Universite Catholique de Louvain - Belgium.
July 1990 - August 1990	Assistant Professor, Computers and Systems Science,
	Jawaharlal Nehru University - India.

Teaching

Teaching experience

I taught a variety of courses from first year undergraduate to Ph.D levels and obtained very good teaching evaluations. Over the past several years, I supervised (or currently supervising) about 37 graduate students, 7 post doctoral fellows and many research assistants. Details and student names are omitted. Also omitted are details of TAs supervised and graduate and undergraduate courses taught.

Development/revision of new courses, programs etc.

1. Introduced B.Sc in Operations Research (Jointly with other colleagues) 2010-2011.

2. Introduced M.Sc and PhD programs in Operations Research (Introduced jointly with other colleagues), 2009-2011.

3. Math402 Operations Research Clinic (new course introduced), 2011.

4. Math 208 Introduction to Operations Research, 2007-08 (jointly with other colleagues).

5. Math 808 Advanced linear programming (New course introduced), 2007-08.

6. Introduced the option of "Operations Research and applied statistics" in B.Sc Industrial mathematics (Introduced jointly with other colleagues).

7. Math 348 Probabilistic models in operations research (New course introduced), 2005.

8. Math 448 Network Flows (New course introduced), 2005.

9. Math 409 Discrete Optimization (New course introduced), 2005.

10. Introduced the Industrial Mathematics - new Operations Research option, (Jointly with Norman Reilly).

11. Revised the program B.Sc. Management and Systems Sciences (Jointly with Tom Loughin) 2005 - 2007.

Research

Major research interests

Discrete Optimization; Operations Research; Operations Management; Business analytics and large scale data; Design, analysis, implementation, and testing of algorithms; Metaheuristics; Operations Research applications in scheduling, transportation, logistics, natural resources, healthcare, and medicine.

Research/Project Funding

#	Program/Source	Year	Amount	My Status	Co-applicants
1	Quantum City, U of Calgary	2023-2024	$25,000	Collaborator	D. Gaur, R. Benkoczi
2	NSERC Discovery grant	2021-2026	$180,000	PI	none
3	NSERC Discovery grant	2015-2021	$168,000	PI	none
4	MDA Corporation (Contract)	2019	$16,000	PI	none
5	NSERC Discovery accelerator award	2015-2017	$120,000	PI	none
6	Mitacs Accelerate	2014	$12,000	co-PI	1Qbit Inc.
7	BC Ferries Contract	2013	$4,000	PI	none
8	BC Ferries Contract	2012-2013	$22,400	PI	none

9	NSERC Discovery grant	2010-2014	$165,000	PI	none
10	NSERC (CRD)	2011-2014	$70,000	PI	none
11	MDA Corporation (CRD)	2011-2014	$70,000	PI	none
12	NSERC Discovery accelerator award	2010-2014	$120,000	PI	none
13	NSERC (Engage, a2b fiber)	2011	$24,250	PI	none
14	BC Ferries (MITACS)	2011	$4,000	PI	none
15	BC Ferries (contract)	2011	$6,000	PI	none
16	MITACS Project	2009-2011	$70,000	co-applicant	PI - B Battacharya
17	NSERC RTI grant	2007	$29,000	PI	5 others
18	BC Ferries (MITACS)	2007	$9000	PI	none
19	MITACS Project	2006-2009	$80,000	co-applicant	PI - B Battacharya
20	NSERC Discovery grant	2005-2009	$119,540	PI	none
21	Presidents's Research Grant, SFU	2005-2006	$10,000	PI	none
22	SFU Start up Grant	2005	$15,000	PI	none
23	NSERC Equipment grant	2004	$15,703	PI	none
24	Day & Ross Transportation Research contract	2003-2005	$164,600	co-PI	J. Christie, D. Du, S. Satir
25	New Brunswick Medical Research Fund	2003 - 2004	$20,000	co-applicant	V. Joshi, P. Forsythe
26	NSERC Discovery grant	1999-2004	$119,540	PI	none
27	British Council grant	1997	$904	PI	none
28	NSERC Equipment Grant	1995	$12,910	PI	none
29	NSERC grant	1995-1998	$82,800	PI	none
30	UNB Research grant	1994-1995	$2,050	PI	none

Refereed Journal Publications

1. A. P. Punnen and N. K. Dhanda, Revisiting some classical explicit linearizations for the quadratic binary optimization problem, *Discrete Optimization* accepted, 2024.

2. W. Yang, Y. Wang, A. Ćustić, A. P. Punnen Experimental analysis of algorithms for the independent quadratic assignment problem, *Computers and Operations Research*, 168 (2024) 106704.

3. A. P. Punnen and J. Dhahan, The knapsack problem with conflict pair constraints on bipartite graphs and extensions, *Algorithms* 17(5) (2024) 219. (19pp)

4. Z. Chang, A. P. Punnen, Z. Zhou, S. Cheng, Solving dynamic satellite image data downlink scheduling problem via an adaptive bi-objective optimization algorithm, *Computers and Operations Research*, 2023, 106388.

5. Z. Chang, A. P. Punnen, Z. Zhou, Multi-strip observation scheduling problem for active-imaging agile earth observation satellites, *Neural Computing and Applications*, 2023.

6. Y. Wang, H. Liu, H. Wang, A. P. Punnen, A three phase matheuristic algorithm for the multi-day task assignment problem, *Computers and Operations Research*, 2023, 106313.

7. P. Sriprathak, A. P. Punnen, T. Stephen, The bipartite Boolean quadric polytope, *Discrete Optimization*, 44 (2022) Part 1, 100657.

8. Y. Wang, H. Zhao; A. P. Punnen, B. Peng, Z. Lu, A fast and robust heuristic algorithm for the minimum weight vertex cover problem and its experimental analysis, *IEEE Access* 9 (2021) 31932–31945.

9. Y. Wang, W. Yang, A. P. Punnen, J. Tian, A. Yin, Z. Lu, The rank one quadratic assignment problem, *INFORMS Journal on Computing* 33 (2021) 979–996.

10. V. Sokol, A. Custic, A. P. Punnen, and B. Bhattacharya, The Bilinear assignment problem: large neighborhoods and experimental analysis of algorithms, *INFORMS Journal on Computing* 32 (2020) 730–746.

11. B. Woods and A. P. Punnen, A class of exponential neighbourhoods for the quadratic travelling salesman problem, *Journal of Combinatorial Optimization* 40 (2020) 303–332.

12. B. Peng, Y. Zhang, T.C.E. Cheng, Z. Lu , A. P. Punnen, A two-individual based path-relinking algorithm for the satellite broadcast scheduling problem, *Knowledge-Based Systems* 196 (2020) 105774.

13. A. P. Punnen, P. Pandey, M. Friesen, Representations of quadratic combinatorial optimization problems: A case study using the quadratic set covering problem, *Computers & Operations Research* 112 (2019) 104769.

14. S. Lendl, A. Custic, A. P. Punnen, Combinatorial optimization problems with interaction costs, *Discrete Optimization* 33 (2019) 101-117.

15. J. Song, Y. Wang, H. Wang, Q. Wu and A. P. Punnen, An effective multi-wave algorithm for solving the max-mean dispersion problem, *Journal of Heuristics*, 25 (2019) 731-752.

16. P. Pandey and A. P. Punnen, The generalized vertex cover problem, *Discrete Optimization* 30 (2018) 121–143.

17. Y. Wang, Q. Wu, A. P. Punnen, F. Glover, Adaptive tabu search with strategic oscillation for the bipartite boolean quadratic programming problem with partitioned variables, *Information Sciences*, 450 (2018) 284–300.

18. A. Custic, R. Zhang, A.P. Punnen, The quadratic spanning tree problem and its variations, *Discrete Optimization*, 27 (2018) 73–87.

19. A. Custic and A. P. Punnen, A characterization of linearizable instances of the quadratic minimum spanning tree problem, *Journal of Combinatorial Optimization*, 35 (2018) 436–453.

20. A. Custic, V. Sokol, A. P. Punnen, and B. Bhattacharya, The bilinear assignment problem: complexity and polynomially solvable special cases, *Mathematical Programming* 166 (2017) 185 – 205.

21. A. Custic and A. P. Punnen, Average value of solutions of the bipartite quadratic assignment problem and linkages to domination analysis, *Operations Research Letters*, 45 (2017) 232–237.

22. D. Karapetyan, A. P. Punnen, and A. J. Parkes, Markov chain methods for the bipartite Boolean quadratic programming problem, *European Journal of Operational Research*, 260 (2017) 494–506.

23. B. Woods, A.P. Punnen, T. Stephen, A linear time algorithm for the 3-neighbour Travelling Salesman Problem on Halin graphs and extensions, *Discrete Optimization*, 26 (2017) 163–182.

24. K. T. Malladi, S. Minic, and A. P. Punnen, Clustered maximum weight clique problem: algorithms and empirical Analysis, *Computers & Operations Research*, 85 (2017) 113–128.

25. Y. Wang and A.P. Punnen, The Boolean quadratic programming problem with generalized upper bound constraints, *Computers & Operations Research* 77 (2017) 1–10.

26. P. Pandey and A.P. Punnen, On a linearization technique for solving the quadratic set covering problem and variations, *Optimization Letters*, 11 (2017) 1357–1370.

27. Y. Wang, S. Minic, R. Leitch, and A. P. Punnen, A GRASP for next generation Sapphire image acquisition scheduling, *International Journal of Aerospace Engineering*, Volume 2016 (2016), Article ID 3518537, 7 pages.

28. A. Yin, A. P. Punnen, and D. Hu, Priority allocation rules for single machine total weighted linear and square tardiness problems, *Production Engineering* 10 (2016) 471–476.

29. A.P. Punnen and Y. Wang, The bipartite quadratic assignment problem and extensions, *European Journal of Operational Research*, 250 (2016) 715 - 725.

30. A. P. Punnen, P. Sripratak, and D. Karapetyan, The bipartite unconstrained 0-1 quadratic programming problem: Polynomially solvable cases, *Discrete Applied Mathematics*, 193 (2015) 1–10.

31. D. Karapetyan, K. T. Malladi, S. Mitrovic-Minic, and A. P. Punnen, The satellite downlink scheduling problem, *Omega*, 53 (2015) 115–123.

32. A. P. Punnen, P. Sripratak, and D. Karapetyan, Average value of solutions for the bipartite boolean quadratic programs and rounding algorithms, *Theoretical Computer Science*, 565 (2015) 77–89.

33. F. Glover, T. Ye, A.P. Punnen, G. Kochenberger, Integrating tabu search and VLSN search to develop enhanced algorithms: A case study using bipartite boolean quadratic programs, *European Journal of Operational Research* 241 (2015) 697–707.

34. A.P. Punnen, S. Taghipour, D. Karapetyan and B. Bhattacharya, The quadratic balanced optimization problem, *Discrete Optimization* 12 (2014) 47-60.

35. J. LaRusic and A.P. Punnen, The asymmetric bottleneck traveling salesman problem: algorithms, complexity and empirical analysis, *Computers and Operations Research* 43 (2014) 20–35.

36. A. P. Punnen and S. N. Kabadi, A linear time algorithm for the Koopmans-Beckman QAP linearization and related problems, *Discrete Optimization* 10 (2013) 200–209.

37. R. Zhang and A.P. Punnen, Quadratic bottleneck knapsack problems, *Journal of Heuristics* 19 (2013) 573–589.

38. D. Karapetyan and A.P. Punnen, A reduced integer programming model for the ferry scheduling problem, *Public Transport* 4 (2013) 151–163.

39. T. Oncan, R. Zhang and A.P. Punnen, Minimum cost matching problem with conflict pair constraints, *Computers and Operations Research* 40 (2013) 920–930.

40. S.N. Kabadi and A. P. Punnen, Spanning cactus of a graph: Extension, optimization, and approximation. *Discrete Applied Mathematics*, 161 (2013) 167–175

41. A.P. Punnen and R. Zhang, Analysis of an approximate greedy algorithm for the maximum edge clique partitioning problem, *Discrete Optimization* 9 (2012) 205-208.

42. J. LaRusic, A.P. Punnen, and E. Aubanel, Experimental analysis of algorithms for the bottleneck traveling salesman problem and its variations, *Journal of Heuristics* 18 (2012) 473-503.

43. Q. Han and A.P. Punnen, On the approximability of vertex cover and related problems, *Discrete Applied Mathematics.* 160 (2012) 197-203.

44. D. K. Benvenuti and A.P. Punnen, Three-value TSP and linkages with the three value linear spanning 2-forests, *Discrete Applied Mathematics* 160 (2012) 38-52.

45. S. N. Kabadi and A. P. Punnen, An $O(n^4)$ algorithm for the QAP linearization problem, *Mathematics of Operations Research* 36 (2011) 754-761.

46. A.P. Punnen and R. Zhang, Quadratic bottleneck Problems, *Naval Research Logistics,* 58 (2011) 153-164.

47. R. Zhang, S.N. Kabadi and A.P. Punnen, Minimum spanning tree problem with conflict constraints and variations, *Discrete Optimization*, 8 (2011) 191-205.

48. L. Turner, A. P. Punnen, Y. P, Aneja, and H. W. Hamacher, On generalized balanced optimization problems, *Mathematical Methods of Operations Research,* 73 (2011) 19–27.

49. J. LaRusic and A.P. Punnen, The balanced traveling salesman problem, *Computers and Operations Research* 38 (2011) 868-875

50. S. N. Kabadi and A. P. Punnen, Trioid: A generalization of matroid and the associated polytope, *Algorithmic operations research* 6 (2011) 29-39.

51. D. K. Benvenuti and A.P. Punnen, SC-Hamiltonicity and its Linkages with strong Hamiltonicity of a graph, *SIAM Journal of Discrete Mathematics*, 23 (2010) 2035-2041

52. T. Oncan and A.P. Punnen, A Lagrangian Based Lower Bounding Procedure and an Efficient Search Algorithm for the Quadratic Minimum Spanning Tree Problem, *Computers and Operations Research* (2010) 1762-1773.

53. D. K. Benvenuti and A.P. Punnen, SC-Hamiltonian graphs and digraphs: New necessary conditions and impacts, *Discrete Mathematics*, 310 (2010) 2841-2846

54. P. Pandey and A.P. Punnen, Piecewise linear fractional programming with Network Flow structure. *Opsearch* 46 (2009) 359-389.

55. R. Ramakrishnan, A.P. Punnen, P. Sharma, An efficient heuristic algorithm for the bottleneck traveling salesman problem. *Opsearch* 46 (2009) 275-288.

56. S. Mitrovic-Minic and A.P. Punnen, Local Search Intensified: Very Large-Scale Variable Neighborhood Search for the Multi-Resource Generalized Assignment Problem. *Discrete optimization* 6 (2009) 370-377.

57. Q. Han, A.P. Punnen, Y. Ye, An edge-reduction algorithm for the vertex cover problem *Operations Research Letters* 37 (2009) 181-186.

58. S. Mitrovic-Minic and A.P. Punnen, Variable intensity local search. *Annals of Information Systems* 10 (2009) 245-252.

59. R. Zhang and A.P. Punnen, Bottleneck Flows in Networks, *Information processing letters* 109 (2009) 334-338.

60. S. Mitrovic-Minic and A.P. Punnen, Very large-scale variable neighborhood search for the generalized assignment problem *Journal of Interdisciplinary Mathematics*, 11 (2008) 653-670.

61. S.N. Kabadi and A.P. Punnen, A strongly polynomial simplex method for the linear fractional assignment problem, *Operations Research Letters* 36 (2008) 402-407.

62. T. Oncan, S.N. Kabadi, K.P.K. Nair, A.P. Punnen, VLSN search algorithms for partitioning problems, *Journal of the operational research society,* UK, 59 (2008)388-398

63. P. Pandey and A.P. Punnen, Simplex method for piecewise-linear fractional programming problem, *European Journal of Operational Research*, 178 (2007) 343-358

64. N. Belacel, H. Raval, and A.P. Punnen, Learning multicriteria classification method PROAFTN from data, *Computers and Operations Research* 34 (2007) 1885-1898

65. S.N. Kabadi and A.P. Punnen, On cost matrices with two and three distinct values of Hamiltonian paths and cycles, *SIAM Journal of Discrete Mathematics* 20 (2006) 977-998

66. O. Chapovska and A.P. Punnen, Variations of the prize collecting Stainer tree problem, *Networks*, 47 (2006) 199-205

67. A.P. Punnen Minmax strongly connected subgraph problem with node weights, *Journal of applied mathematics and decision sciences* (2005) 107-111

68. A.P. Punnen and O. Chapovska, The Bottleneck k-MST, *Information Processing Letters* 95 (2005) 512-517.

69. A.P. Punnen, Domination analysis of the prize collecting TSP, *Ganita* 55 (2005) 87-98.

70. J.B. Orlin, A.P. Punnen, A. Schulz, Approximate local search in combinatorial optimization, *SIAM Journal of Computing* 33 (2004) 1201-1214.

71. A.P. Punnen and Y.P. Aneja, Lexicographic balanced optimization problems, *Operations Research Letters* 32 (2004) 27-30

72. A.P. Punnen, On bottleneck Assignment problem under categorization, *Computers and Operations Research* 31 (2004) 151-154.

73. S.N. Kabadi and A.P. Punnen, Weighted graphs with Hamiltonian cycles of same length, *Discrete Mathematics*, 271 (2003) 129-139.

74. A.P. Punnen, F. Margot, and S.N. Kabadi, TSP heuristics: domination analysis and complexity, *Algorithmica* 35 (2003) 111-127.

75. A.P. Punnen and S.N. Kabadi, Domination Analysis of some heuristics for the asymmetric traveling salesman problem, *Discrete Applied Mathematics* 119 (2002) 117-128.

76. R.K. Ahuja, O. Ergun, J.B. Orlin , A.P. Punnen, A survey of very large scale neighborhood search techniques, *Discrete Applied Mathematics* 123 (2002) 75-102.

77. P. Vellaisamy and A.P. Punnen, Improved estimators for the selected location parameters, *Statistical Papers* 43 (2002) 291-299.

78. A.P. Punnen, Combinatorial optimization with multiplicative objective function, *International Journal Of Operations and Quantitative Management* 7 (2001) 205-209.

79. P. Vellaisamy and A.P. Punnen On the nature of binomial distribution, *Journal of Applied Probability* 38 (2001) 36-44.

80. A.P. Punnen, The traveling salesman problem: New approximation algorithms and domination analysis, *Journal of Information and Optimization*, 22 (2001) 191-206.

81. A.P. Punnen and Y.P. Aneja, An improved lower bound for the multiple bottleneck assignment problem. *European Journal of Operations Research*, 112 (1999) 167-173.

82. A.P. Punnen and K.P.K. Nair, Constrained balanced optimization problems, *Computers and Mathematics with Applications* 37 (1999) 157-163.

83. J.M. Philips, A.P. Punnen and S.N. Kabadi, A linear time algorithm for the bottleneck traveling salesman problem on a Halin graph, *Information Processing Letters*, 30 (1998) 105 - 108.

84. A.P. Punnen and K.P.K. Nair, Linear Multiplicative Programming, *Opsearch* 34 (1997) 140-154.

85. F. Glover and A.P. Punnen, The traveling salesman problem: New solvable cases and linkages with the development of approximation algorithms, *Journal of the Operational Research Society* 48 (1997) 502 - 510.

86. A.P. Punnen, On locating a single path-like facility in a general graph, *RAIRO-Operations Research* 31 (1997) 107-115.

87. A.P. Punnen and Y.P. Aneja, Minimum Dispersion Problems, *Discrete Applied Mathematics* 75 (1997) 93-102.

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89. A.P. Punnen, A fast algorithm for a class of bottleneck problems, *Computing* 56 (1996) 397- 401 (short communication)

90. R.K. Ahuja, J.L. Batra, S.K. Gupta and A.P. Punnen, Optimal expansion of capacitated transshipment networks *European Journal of Operational Research* 89 (1996) 176-184.

91. A.P. Punnen and K.P.K. Nair, An O(nlogn) algorithm for the max+sum spanning tree problem, *European Journal of Operational Research* 89(1996) 423-426.

92. A.P. Punnen and K.P.K. Nair, An improved algorithm for constrained bottleneck spanning tree problem, *INFORMS Journal of Computing* 8 (1996) 41-44.

93. A.P. Punnen and S.K. Bhatt, Some ratio sharing models, *Asia Pacific Journal of Operational Research* 12(1995)187-198.

94. A.P. Punnen, K.P.K. Nair and Y.P. Aneja, Generalized bottleneck problems, *Optimization* 35 (1995) 159-169.

95. I. Averbach, O. Berman and A.P. Punnen, Constrained matroidal bottleneck problem, *Discrete Applied Mathematics* 63(1995)201-214.

96. A.P. Punnen and K.P.K. Nair, Polynomial algorithms for a class of discrete minmax linear programming problems, *Journal of Operational Research Society* 46 (1995) 499 - 506.

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98. A.P. Punnen and Y.P. Aneja, A tabu search algorithm for resource constrained assignment problem, *Journal of Operational Research Society* 46 (1995) 214 - 220.

99. A.P. Punnen and K.P.K. Nair, Improved complexity bound for the bottleneck bipartite matching problem, *Discrete Applied Mathematics* 55 (1994) 91 - 93.

100. A.P. Punnen and K.P.K. Nair, A fast and simple algorithm for the bottleneck bi-connected spanning subgraph problem, *Information Processing Letters* 50 (1994) 283 - 286.

101. A.P. Punnen, On combined minmax-minsum optimization, *Computers and Operations Research* 21 (1994) 707-716.

102. A.P. Punnen and Y.P. Aneja, Categorized assignment scheduling: A tabu search approach, *Journal of Operational Research Society* 44(1993) 673-679.

103. S.K. Gupta and A.P. Punnen, Minmax linear knapsack problem with grouped variables and GUB constraints, *Optimization* 28(1993) 85-94.

104. S.K. Gupta and A.P. Punnen, Group centre and group median of a tree, *European Journal of Operational Research* 65(1993) 400-406.

105. M.B. Richey and A.P. Punnen, Minimum weight perfect bipartite matching and spanning trees under categorization, *Discrete Applied Mathematics* 39(1992) 147-153.

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108. A.P. Punnen, A linear time algorithm for the maximum capacity path problem, *European Journal of Operational Research* 53(1991) 402-404.

109. S.K. Gupta and A.P. Punnen, K-sum optimization problems, *Operations Research Letters* 9 (1990) 121-126.

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111. S.K. Gupta and A.P. Punnen, Group centre and group median of a network, *European Journal of Operational Research* 38 (1989) 94-98.

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Book Chapters

113. A. P. Punnen and E. Cela, Polynomially solvable special cases of QUBO, in *Quadratic unconstrained binary optimization problem: Theory, Algorithms, and Applications*, A. P. Punnen (ed.), Springer, 2022.

114. A. P. Punnen, Introduction to QUBO, in *Quadratic unconstrained binary optimization problem: Theory, Algorithms, and Applications*, A. P. Punnen (ed.), Springer, 2022.

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Papers Submitted for Publication

132. W. Yang, Y. Wang, and A. P. Punnen, Landscape detection guided iterated tabu search for cross-dock door assignment.

133. H. Liu, J-K. Hao, Y. Wang, A. P. Punnen, Stochastic patient admission scheduling with an exponential number of scenarios.

134. D. Yin, J. Wang, Y. Wang and A. P. Punnen, Multi-operator driven iterated tabu search for collaborative operating room scheduling.

135. A. Ćustić, W. Yang, Y. Wang, A. P. Punnen The Independent quadratic assignment problem: complexity and polynomially solvable special cases.

136. X. Yang; H. Liu, Y. Wang, A. P. Punnen, H. Wang,Integrating patient satisfaction into operating room planning and scheduling.

Papers Under Preparation

137. A. P. Punnen, X. Yang, and Y. Wang, Min-max optimization problems over the base system of a partition matroid.

138. A. P. Punnen and N. Kaur, On compact linearizations of the quadratic binary optimization problem.

139. N. Kaur and A. P. Punnen, Strong aggregation of constraints in binary integer programs.

140. A. P. Punnen and C. Li, The generalized linear fractional program with binary variables

141. B. Woods and A. P. Punnen, Pyramidal tours and the quadratic travelling salesman problem

142. X. Shen and A. P. Punnen, The path selection problem in network design.

Other Research Reports

143. A. P. Punnen, M. Walter, B. Woods, A characterization of linearizable instances of the quadratic travelling salesman problem, 2019.

144. A.P. Punnen and D. Karapetyan, Fleet size planning and scheduling of passenger ferry operations linking Texada, Powell River, and Comox, (180 pages), 2013.

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148. D. Karapetyan, K. T. Malladi, S. Mitrovic-Minic, and A.P. Punnen, Satellite Downlink Scheduling, (40 pages), 2012.

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152. J. Christie, D. Du, A.P. Punnen, S. Satir, D. David, Transportation Scheduling at Day & Ross: Line haul operations. Final Report of contract research, 2006 (200 pages)

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157. A. P. Punnen, Discrete Mathematics and Graph Theory, (under preparation, Draft version available, 2023)

158. A.P. Punnen, Linear Programming and Network Models, (under preparation, Draft version available, 2022)

159. A. P. Punnen (editor), Quadratic unconstrained binary optimization problem: Theory, Algorithms, and Applications, Springer, 2022.

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165. A.P. Punnen, Local search in Combinatorial Optimization by Emile Aarts and J K Lenstra (eds) *Interfaces*

166. A.P. Punnen, Interactive Operations Research with MAPLE, by M. Parlar, *INFOR* 40 (2002) 173-174.

167. A.P. Punnen Postoptimal Analysis, Parametric Programming and Related topics by Thomas Gal, *Interfaces*, 1997.

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Conference Presentations

(*Variations of most of these presentations appeared as journal publications listed above. Presentations are done by me or one of the co-authors. Sometimes presentations are also done jointly.*)

169. A. P. Punnen, W. Yang, Y. Wang and A. Custic, An interesting generalization of the Koopmans-Beckman quadratic assignment problem, INFORMS IOS conference, 2024, Houston, Texas, USA, 2024.

170. Y. Wang, D. Yin, W. Junaru, A. P. Punnen, and Z. Lu, Multi-hospitals collaborative operating room scheduling with downstream capacity constraints, 33rd European Conference on Operational Research. Copenhagen, Denmark. 2024.

171. W. Yang, Y. Wang, A. P. Punnen, J.-K. Hao, A new simheuristic for stochastic cross-dock scheduling problem with time windows under uncertainty, 33rd European Conference on Operational Research. Copenhagen, Denmark. 2024.

172. Y. Wang, D. Yin and A. P. Punnen, Multi-operator driven iterated tabu search for collaborative operating room scheduling, 15th Metaheuristics International Conference. Lorient, France. 2024.

173. X. Yang, Z. G. Zhang, Y. Wang, and A. P. Punnen, Aggregate surgery capacity planning with consideration of self-cancellation, INFORMS conference, Seattle, 2024.

174. D. Yin, Y. Wang, J. Wang, and A. P. Punnen, Hyper-heuristic for Collaborative Operating Room Scheduling with Patient Preferences, IEEM2024, December 2024,Bangkok, Thailand.

175. J. Li, S. Zhao, Y. Wang, M. Huang, and A. P. Punnen, Robust Master Surgery Scheduling under Uncertainty in Surgery Durations, IEEM2024, December 2024,Bangkok, Thailand.

176. A. P Punnen, W. Yang, Y. Wang, and A. Custic, The Independent Quadratic Assignment Problem: Tractable Cases and Experimental Analysis of Algorithms, ORSI Annual conference, 2023, Bangalore, India.

177. Y. Wang, H. Liu, and A. P. Punnen, An effective model-driven heuristic algorithm for the collaborative operating room scheduling problem, 2023, ICIAM 2023, Tokyo.

178. N. Kaur and A. P. Punnen, Introducing some linearization techniques for the quadratic unconstrained binary optimization problem and their comparison with the classical models, CORS conference, Montreal, 2023.

179. A. P. Punnen, Domination analysis of approximation algorithms for QUBO, APORS 2022, Manila, Philippines.

180. N. Kaur and A. P. Punnen, A comparative study of some explicit linearization models for the quadratic binary optimization problem, EURO 2022, July 2022, Finland.

181. Y. Wang, H. Liu, and A. P. Punnen, Multi-hospitals collaborative operating room scheduling with uncertain surgery duration, IFORS 2021, Seoul, S. Korea.

182. A. P. Punnen, The linear fractional assignment problem: complexity, MIP models, and experimental analysis, 52nd Annual conference of operational research society of India, Ahmedabad, India, 2019.

183. Y. Wang, H. Liu, H. Wang, A. P. Punnen, Bi-level optimization for collaborative operating room scheduling, 11th CIRP Conference on Industrial Product-Service Systems. Zhuhai and Hong Kong China, 2019.

184. Y. Wang, H. Liu, H. Wang, A. P. Punnen, Collaborative operating room scheduling under China's hospital alliance policy, 2019 POMS International Conference in China, Tianjin, China. 2019.

185. W. Yang, Y. Wang, A. P. Punnen, A. Ćustić, Model Based Tabu Search Algorithms for the Independent Quadratic Assignment Problem, INFORMS Annual Meeting 2019, Seattle, Washington.

186. H. Liu, Y. Wang, H. Wang, A. P. Punnen, An Effective Matheuristic for the New Large-scale Task Assignment Problem, INFORMS Annual Meeting 2019, Seattle, Washington.

187. D. Yin, Y. Wang, A. P. Punnen, An effective memetic algorithm for the boolean quadratic programming problem with generalized upper bound constraints, INFORMS Annual Meeting 2018, Phoenix, Arizona.

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189. A. P. Punnen, Representations of quadratic combinatorial optimization problems, Conference on Optimization and Data Science: Global Perspectives and Applications, 2018, Thompson Rivers University, BC.

190. P. Pandey, A. P. Punnen, Generalized Vertex Cover Problem, CORS 2016, Banff.

191. K. T. Malladi, S. Mitrovic-Minic, A. P. Punnen, Cluster Restricted Maximum Weight Clique Problem: Algorithms and Empirical Analysis, CORS 2016, Banff.

192. A, Custic, R. Zhang, A. P. Punnen, The Quadratic Minimum Spanning Tree Problem and Its Variations, CORS 2016, Banff.

193. P. Sripratak, A. P. Punnen, T. Stephen, The Bipartite Boolean Quadric Polytope, The 21st Annual Meeting in Mathematics (AMM 2016) and Annual Pure and Applied Mathematics Conference 2016 (APAM 2016), Thailand.

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195. A. Rafiey, V. Sokol, R. Krishnamurti, S. Mitrovic Minic, A. P. Punnen and K. T. Malladi, A Network Model for the Hospital Routing Problem, ICORES 2015, Lisbon, Portugal.

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199. D. Karapetyan and A. P. Punnen, Fleet size planning and schedule optimization for the British Columbia Ferry Services Inc., CORS 2014, Ottawa.

200. P. Sripratak, A. P. Punnen, and D. Karapetyan, Complexity and solvable cases of the bipartite Boolean quadratic programs, CORS 2014, Ottawa.

201. X. Shen, A. P. Punnen, and D. Karapetyan, Path Selection Problem in network design, CORS 2014, Ottawa.

202. A. P. Punnen, P. Sripratak, and D. Karapetyan, Domination analysis of algorithms for bipartite boolean quadratic programs, FCT 2013, Liverpool, UK.

203. D. Karapetyan and A. P. Punnen, An efficient approach to ferry scheduling and fleet optimization problems, CORS Vancouver, 2013.

204. K. T. Malladi, S. Mitrovic-Minic,D. Karapetyan, and A. P. Punnen, Satellite Image Acquisition Scheduling Problem: A case study with RADARSAT Constellation, CORS Vancouver, 2013.

205. D. Karapetyan, K. T. Malladi, S. Mitrovic-Minic, and A. P. Punnen, An Algorithm for the Satellite Downlink Scheduling Problem, CORS 2012, Niagara Falls.

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208. S. Mitrovic-Minic and A.P. Punnen, Routing and scheduling of a heterogeneous fleet of re-configurable ferries: a model, a heuristic, and a case study, OR 2011 - International Conference on Operations Research, Zurich, Switzerland, 2011.

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210. S.N. Kabadi and A.P. Punnen, The minimum spanning cactus problem: complexity, approximation and cactus extension, CORS/MITACS Edmonton, 2010.

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215. B. Woods, N. Belacel, and A. P. Punnen, Optimization problems on variations of Halin graphs, CORS/INFORMS 2009.

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243. A.P. Punnen, Efficient heuristics for the traveling salesman problem, *SQC-OR*, ISI Madras, 1998.

244. A.P. Punnen, S.N. Kabadi, and J.M. Phillips, A linear time algorithm for bottleneck TSP on a Halin graph and extensions, *INFORMS/CORS* Montreal, April 1998.

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249. A.P. Punnen and K.P.K Nair, On capacitated stochastic spanning tree problem in a network. *CORS*, Ottawa May 1977.

250. S.N. Kabadi and A.P. Punnen, Traveling salesman problem with two distinct tour values, *SIAM conference on Optimization*, Victoria, B.C., May 1996.

251. S.N. Kabadi and A.P. Punnen, Prize-Collecting traveling salesman problem, *INFORMS* Washington DC May, 1996.

252. S.N. Kabadi and A.P. Punnen, Constant TSP revisited, *Optimization Days*, Montreal May, 1996.

253. A.P. Punnen, Domination analysis of heuristics and the prize collecting traveling salesman problem, *ACORS* Halifax, 1995.

254. A.P. Punnen and Y.P. Aneja, A unified approach for certain combinatorial optimization problems, *INFORMS* Singapore 1995.

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259. Y.P. Aneja and A.P. Punnen, Multiple bottleneck assignment and transportation problems, *TIMS/ORSA* Boston 1994.

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262. A.P. Punnen and Y.P. Aneja, Randomized local search algorithms, *TIMS/ORSA* Chicago, 1993.

263. A.P. Punnen and Y.P. Aneja, On k-sum optimization problems, *CORS* Halifax 1992.

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265. S.K. Gupta and A.P. Punnen, Group centre and group median of a tree, *ORSI* Trivandrum, 1989.

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267. S.K. Gupta and A.P. Punnen, Minimum deviation problems, *ORSI* New Delhi, 1988.

Service

Committee service at SFU

#	year	Status	Name of the Committee	Note
1	2024 - 2025	Alternate Member	Senate Committee on Disciplinary Appeals	Elected by Senate
2	2023 - 2024	Alternate Member	Senate Committee on Disciplinary Appeals	Elected by Senate
3	2022	Member	Faculty Review Committee (Physics Case)	nominated
4	2021 -	Member	SFU's College of Internal Peer Pre-Reviewers	Invited
5	2021 - 2023	Alternate Member	Senate Committee on Disciplinary Appeals	Elected by Senate
6	2021 - 2023	Member	Faculty College	Elected position
7	2019 - 2021	Member	Faculty College	Elected position
8	2019 - 2021	Member	Senate Committee on Disciplinary Appeals	Elected by Senate
9	2017 - 2019	Member	Senate Committee on Disciplinary Appeals	Elected by Senate
10	2015 - 2017	Member	Senate Committee on Disciplinary Appeals	Elected by Senate
11	2007 - 2016	Member	Steering committee, MSSC Program	
12	2013 - 2016	Member	CORDS Steering committee	Elected by CORDS.
13	2013-2015	Member	Senate Committee on Disciplinary Appeals	Elected by Senate
14	2013-2014	Vice-Chair	Senate Committee on Disciplinary Appeals	Elected by SCODA
15	2012 - 2013	Member	Advisory Council, SFUFA	
16	2011-2013	Member	Senate Committee on Disciplinary Appeals	Elected by Senate
17	2010 - 2013	Member	Steering Committee, CORDS	SFU
18	2011	Member	TPC, Mathematics Department	Elected by department
19	2011-2012	Vice-Chair	Senate Committee on Disciplinary Appeals	Elected by SCODA
20	2009-2011	Member	Senate Committee on Disciplinary Appeals	Elected by Senate
21	2007 - 2009	Member	Senate Committee on Disciplinary Appeals	Elected by Senate
22	2007	Member	Joint committee, student progress monitoring (Mechatronics)	

23	2006-2009	Director	Centre for Operations Research and Decision Sciences (CORDS)	Founding director
24	2005-2007	Member	ALRP committee, Mathematics	
25	2005-2009	Member	Graduate Studies Committee	
26	2005- 2008	Member	SFU India Working group	
27	2005-2008	Co-advisor	Industrial Mathematics Program	

External examiner, Supervisory committee (Outside Mathematics)

Year	Committee	Program	Name	Institution
2019	External Examiner	M.Sc. Thesis	R. Agarwal	SFU Computing Science
2019	External Examiner	M.Sc. Project	H. Homapour	SFU Computing Science
2016-2017	Member	M.Sc Supervisory Committee	V. Vijayvargiya	SFU Computing Science
2012-2016	Member	Ph.D Supervisory committee	E. Iranmanesh	SFU Computing Science
2016	External Examiner	PhD Thesis	R. Stanek	Graz University of Technology, Austria
2015	External examiner	Ph.D Thesis	R. Todosijević	University of Valenciennes and Hainaut-Cambresis, France
2015	External Examiner	Ph.D Thesis	R. Gupta	University of Delhi, India.
2014	External Examiner	Ph.D Thesis	C. Wang	SFU Computing Science
2010	External Examiner	Ph.D Thesis	-	University of Delhi, India.
2008	External Examiner	M.Sc Thesis		Lethbridge University.
2008	External Examiner	Ph.D Thesis	-	IIT Kanpur, India
2008	External Examiner	Ph.D Thesis	-	IIT Kanpur, India
2005	External Examiner	Ph.D Thesis	-	IIT Kanpur, India
2004	External Examiner	Ph.D Thesis	-	University of Windsor
2003	External Examiner	Ph.D Thesis	-	UNB-Fredericton Forestry.
-	External Examiner	Ph.D. Thesis	-	Delhi University, India.
-	External Examiner	Ph.D. Thesis	-	Delhi University, India.
-	External Examiner	Ph.D. Thesis	-	Utkal University, India
1998	External Examiner	MBA Thesis	-	UNB-Fredericton Business

Other Service outside SFU

#	year	Role	Name of the Committee	Note
1	2024	External Reviewer	Promotion to Full Professor Assessment, University of Calgary	Canada
2	2024	External Reviewer	Tenure and promotion Assessment, Bucknell University	USA
3	2023-2024	Member, Program Committee	EvoCOP 2024	Wales, UK.
4	2023	External Reviewer	Tenure and promotion Assessment, University of Colorado Denver	USA
5	2022-2025	Member	Arthur B. McDonald Fellowships Committee, NSERC	Canada
6	2022	Co-Chair	Plenary & Keynotes Committee	INFORMS-CORS conference Vancouver.
7	2022	External Reviewer	Promotion to full professor assessment, McMaster University	Canada
8	2021	External Reviewer	Tenure Assessment, University of Bahrain	Bahrain
9	2021	External Reviewer	Probationary Assessment, University of Colorado Denver	USA
10	2019-2020	Co-organizer	The stream "Meta-Analytics: A Marriage of Metaheuristics and Analytics"	IFORS 2020, Korea
11	2016-2018	Member	NSERC evaluation group on Civil, Industrial and Systems Engineering	
12	2016-2017	Member	Program Committee, CALDAM 2017	Goa, India
13	2016	Member	CORS Practice prize committee	
14	2014	External reviewer	Promotion to full professor assessment, Lethbridge University	Canada
15	2012-2013	Vice President	CORS Vancouver Chapter	
16	2013	Program Chair	CORS Annual Conference	Vancouver
17	2013	Local Organizations	CORS Annual conference	Vancouver
18	2011	External reviewer	Promotion and tenure assessment, New Mexico State University	USA
19	2011	Member	Scientific Committee, International conference on swarm intelligence	France
20	2011	Organizer	Operations Research and Computing cluster, CORS conference	Newfoundland
21	2009	Co-organizer	WCOM	SFU
22	2008	Organizer	Discrete Optimization Cluster, CORS conference	Laval
23	2008	External reviewer	Promotion assessment, University of New Brunswick	Canada

24	2007	Organizer	Second international symposium on Algorithmic operations research	SFU
25	2007	Organizer	First international operations research case competition	SFU
26	2007	Organizer	Discrete Optimization Cluster (4 sessions), CORS conference	London Ontario
27	2007	Co-organizer	Geometrically-Constrained Resource Allocation Session, MITACS-CMS joint meeting	Winnipeg
28	2006	External reviewer	Tenure assessment, University of Windsor	Canada
29	2006	Co-organizer	Combinatorial optimization cluster (6 sessions), CORS Conference	Montreal
30	2006	Organizer	First international symposium on Algorithmic operations research	SFU
31	2004	External reviewer	Promotion and tenure assessment, University of Windsor	Canada
32	2001-2003	Member	Board of Directors, Canadian Mathematical Society	
33	2000-2003	Member	Canadian Mathematical Society, Education Committee	
34	2000 - 2003	Member	Subcommittee of Education Committee of Canadian Mathematical Society on provincial competitions	
35	1999	Member	Organizing Committee, AARMS workshop on Combinatorial designs	Newfoundland
36	1999	Member	International advisory board, ICOQM	India
37	2000	Member	International advisory committee, APMOD, Brunel University	UK
38	1998	Member	APICS Mathematics Competition, Examination Committee,	
39	1998	Chair	Local organizations, CMS Summer conference	Saint John
40	1998	Co-organizer	Discrete Mathematics session at CMS Summer conference	Saint John
41	1997	Co-organizer	Five sessions at the International Symposium on Mathematical Programming	Switzerland
42	1997	Provincial Coordinator	(jointly with M.Kamel) for the First Maritime Mathematics Competition for High school students, New Brunswick	
43	1999	Organizer	Session on Bottleneck Optimization, IN- FORMS International	Singapore

Committee Service at UNB

#	year	Status	Name of the Committee	Note
1	Member	Senate Honorary degrees committee	2004 - 2005	UNB
2	Director	Mathematics and Statistics GAU	2002-2004	UNB
3	Member	Department curriculum committee	2001 - 2003	UNB
4	Member	Department nominating committee	2001 - 2002	UNB
5	Member	Level - I Assessment committee	2001 - 2003	UNB
6	Member	Level-II Assessment committee	2001 - 2003	UNB
7	Member	Senate Library Committee	1998 - 2001	UNB
8	Member	Department Chair search committee	1999 - 2000	UNB
9	Member	GAU Executive Committee	1996-2000	UNB
10	Member	Department Library Committee	1998-2000	UNB
11	Member	Chair Search Committee	1998	UNB
12	Member	Vice-president's Excellence in Teaching Committee	1996-1998	UNB
13	Member	Committee on WWW Policy and guidelines	1997	UNB
14	Member	Level - I Assessment committee	1996 - 1997	UNB
15	Chair	Senate Curriculum Committee	1996-1997	UNB
16	Member	Senate Curriculum Committee	1995 - 1998	UNB
17	Chair	SASE Nominating Committee	1998 - 1999	UNB
18	Member	SASE Nominating Committee	1995 -1998	UNB
19	Member	MSCS Nominating Committee	1996-1998	UNB
20	Member	MSCS Public Relations Committee	1994-1995	UNB
21	Member	MSCS Nominating Committee	1994-95	UNB
22	Member	MSCS Curriculum committee	1994 - 1998	UNB

Membership in Professional Societies

1. Operations Research Society of India (Life Member)

2. Institute for Operations Research and Management Science

3. Canadian Operational Research Society

Journal Editorial Activities

#	Year	position	Journal	Co-editor	Note
1	2022-	Editorial Board	Algorithms		
2	2022	Guest Editor	Discrete Optimization	R. Sotirov	Quadratic combinatorial optimization problems
3	2005-2012	Editor-in-chief	Algorithmic Operations Research	NA	
4	2002-2007	Associate Editor	International Abstracts in Operations Research	NA	
5	2006	Guest Editor	Algorithmic Operations Research	J.R. Birge	Special issue in memory of George B. Dantzig.
6	2005	Guest Editor	Discrete Optimization	G. Gutin	Special issue on variations of the traveling salesman problem
7	2005	Guest Editor	Journal of Applied Mathematics and Decision Sciences	P. Sharma	Special issue on Combinatorial Optimization
8	1999-2005	Associate Editor	Journal of Applied Mathematics and Decision Sciences	NA	
9	1998-2005	Area Editor	International Journal of Operations and Quantitative Management	NA	
10	1998-2002	Editorial Advisory board member	Computers & Operations Research	NA	
11	2002	Guest editor	Discrete Applied Mathematics	G. Gutin	Special issue on Foundations of Heuristics in Combinatorial Optimization
12	1999	Guest editor	Computers & Operations Research	none	Special issue on the Traveling Salesman Problem

Awards

1	NSERC Discovery accelerator award, 2015.
2	CORS Practice Prize (2nd place), 2014.
3	NSERC Discovery accelerator award, 2010.
4	Best theory paper award at ORSI Annual conference, 2005.
5	Merit Award, UNB Saint John, 1996.
6	CORE Fellowship, Universite Catholique de Louvain, Belgium, 1990.