

Curriculum Vitae (March 2016)

(Ponnu) Kumaraswamy Ponnambalam
Professor
Department of Systems Design Engineering
University of Waterloo

Education

<u>University</u>	<u>Years</u>	<u>Specialization</u>	<u>Degree</u>
University of Toronto	1981-87	Systems Analysis	Ph.D.
National University of Ireland	1979-81	Hydrologic Systems	M.Sc.
Madras University	1974-79	Civil Engineering	B.E.

Employment History

July'04- Present	Professor. Was the <i>Associate Chair of Graduate Studies, Dept. of Systems Design Engineering</i> (from Sept'04 to Dec'08).
Sep'09 – Aug'10	Invited to a visiting fellowship at TUDelft, Netherlands spent during the sabbatical leave.
Sept'97- June'04	Associate Professor, Dept. of Systems Design Engineering, U. of Waterloo. [Spent Jan-April 2003 as a Visiting Professor, Indian Inst. of Tech. Madras, Chennai, during part of the sabbatical leave]
Sept'96-Aug'97	Research Fellow, Tech. Univ. of Delft, Netherlands. (on Sabbatical leave from University of Waterloo, 1996-97)
March'90 – Aug'96	Assistant Prof., Dept. of Systems Design Engineering, U. of Waterloo. (Tenured in July 1995).
July'88 - Feb'90	Research Asst. Professor with projects in Dept's of Civil, Systems Design & Electrical and Computer Engg., U. of Waterloo
May'88 - June'88	Post-Doc. Fellow, Dept. of Civil Engg., U. of Toronto
Jan'88 - April'88	Visiting Lecturer, U. of Ottawa, Ottawa
Sept'81 - Dec'87	Graduate Assistant, U. of Toronto
Oct'80 - Aug'81	Project Assoc. and Assoc. Lect., College of Engineering, Madras

GOOGLE has been ranking my research group page as the number one ranked site (even ahead of U.S. Govt sites) for the keywords "Design, optimization, uncertainty", for many years in a row.

Current Grants

NWMO Grant for “Probabilistic model for predicting the life expectancy of used fuel containers”, \$39,000/year, 2014-2017. (coapplicant with Prof M. Pandey).

Canadian center of excellence MEOPAR grant, \$160,000/year, 2014-2017, (about 15% of the grant, PI: Andrea Scott).

NSERC Discovery Grant (Industrial Engineering Committee) " Multidisciplinary Design optimization under Uncertainty" (2015-2020), \$21,000/year.

Communitech Database Grant “ Sea ice data assimilation project”, \$50000 (CO-PI with Andrea Scott), 2013-2014.

FEDDEV Grant “Design of a predictive hospital wait time dashboard”, \$50,000 (PI with Catherine Burns), 2012-2013.

NSERC Engage Grant “Predicting patient wait times at a local hospital”, \$25,000 (2012).

NSERC Discovery Grant (Industrial Engineering Committee) " Design optimization under Uncertainty" (2009-2014) \$28,000/year.

Ontario Research Fund Research Excellence (ORF-RE). “Greenhouse Gas Emission Free and Energy Efficient Power Technology for Information Systems” (2008-13), \$5,539,084. (PI for U. of Waterloo, 15% of total grant).

MITACS Doctoral Scholarship (\$143,000) awarded to a student from India to work with me who was a MITACS summer intern in 2010 (\$10,000).

CITO (OCE) Industrial Research Grant: "QoS Optimization using Adaptive Intelligence Techniques in Satellite Systems", (2006-2007), \$800,000. (PI for U. of Waterloo, 33% of total grant)
+ other older grants.

LIST OF RESEARCH PUBLICATIONS

Co-authors supervised are indicated by the following:

PDF = Post-Doctoral Fellow of the Applicant, GS = Graduate Student of the Applicant, GS1 = Graduate Student of the Applicant with a Co-Supervisor, GS2 = Graduate Student Co-Supervised by the Applicant, URA = Undergraduate Research Assistant, VS = Visiting Scholar

Publications in Refereed Journals (submitted/under revision)

1. El-Rayani, Y.,(GS1) A. Narayan, K. Ponnambalam, R. El-Shatshat, P. Jain, Two-stage stochastic risk model for the power procurement problem, submitted to *Journal of Energy*, submitted Nov 2015.
2. Narayan, A.(GS) and K. Ponnambalam, Extreme value analysis under climate changes using stochastic differential equations, for submission to *Journal of Hydrology*.
3. Mahootchi, M, (GS1) T. Ahmadi & K. Ponnambalam A novel formulation for inventory management in a one warehouse multi retailers system with two stochastic demand patterns, submitted to *Decision Sciences*, 2013.
4. Vallamsundar, S, (GS1), K. Ponnambalam, and G. Cascante. Analysis of nondestructive testing data using artificial intelligence and statistical methods, *Soil Dynamics and Earthquake Engineering*.
5. Eajal , A.,(GS1) Mohamed A. Abdelwahed , E. F. El-Saadany , and K. Ponnambalam "A Unified Approach to the Power Flow Problem in AC/DC Hybrid Microgrids , *IEEE Transactions on Sustainable Renewable Energy*, under review.

Publications in Refereed Journals (in print or accepted)

59. Hanafizadeh, P., A.H.M. Qahi , K. Ponnambalam, Robust Option through Binomial Tree Method, *International Journal of Strategic Decision Sciences*, accepted Sept, 2015..
58. Eajal, A. (GS1), Shaaban, M., F., Ponnambalam, K., and El-Saadany, F., E. Stochastic Centralized Dispatch Scheme for Hybrid AC/DC Smart Distribution Systems, *IEEE Transactions on Sustainable Renewable Energy*, accepted, Dec 2015.
57. Mousavi, S. J., H. Alizadeh, K. Ponnambalam. Storage-yield analysis of surface water reservoirs: the role of reliability constraints and operating policies. *Stochastic Environmental Research and Risk Assessment*. 28(8): 2051-2061, 2014.
56. Mahootchi, M. (GS1), H. Tizhoosh, K. Ponnambalam. Oppositional Extension of Reinforcement Learning Techniques, *Information Sciences*, 275: 101-114, 2014.
55. Seifi, A., K. Ponnambalam, J. Vlach, 2013. Optimization of filter designs with dependent and asymmetrically distributed parameters, *Journal of Franklin Institute*, 350(2), 378-396.

- 54.. Mahootchi, M, (GS1) T. Ahmadi & K. Ponnambalam, Introducing a New Formulation for the Warehouse Inventory Management Systems: with Two Stochastic Demand Patterns, *International Journal of Industrial Engineering & Production Research*, 23(4), 277-284, 2012.
53. Vallamsundar, S., (GS1) K. Ponnambalam, and G. Cascante. Automatic tools for nondestructive testing for structural maintenance, *W. Indian Journal of Civil Engineering*, 35(1) 1-6, 2011.
52. Mahootchi, M. and Ponnambalam, K. (2013). "Parambikulam-Aliyar Project Operations Optimization with Reliability Constraints." *J. Water Resour. Plann. Manage.*, 139(4), 364–375.
51. Kamali, M.,(GS1) K. Ponnambalam, R. Soulis. Comparison of several heuristic approaches to calibration of WATCLASS hydrologic model, *Canadian Water Resources Journal*, 38:1, 40-46, 2013. DOI: 10.1080/07011784.2013.774154
50. Mahootchi, Masoud (GS1), K. Ponnambalam, H. Tizhoosh, 2010. Operations optimization of multireservoir systems using storage moments equations, *Advances in Water Resources*, 33 (2010) 1150–1163.
49. Alvarez Lopez, J. (PDF), K. Ponnambalam, 2010. Long-term uncertainty evaluation of pool electricity markets, *Energy Policy*, 38(32), 840-849.
48. Mahootchi, M. (GS1), K. Ponnambalam, H. Tizhoosh, 2010. Comparison of risk-based optimization models for reservoir management, *Canadian J. of Civil Engineering*, 37, 112-124.
47. Hanafizadeh, P (VS), K. Ponnambalam, 2009. Asset allocation using reliability method, *Mathematical and Computer Modelling*, **50(1-2)**, 21-31.
46. Fletcher S. (GS), K. Ponnambalam, 2008. Stochastic control of reservoir systems using indicator functions: New enhancements, *Water Resources Research*, 44(12), 1029-1039.
45. Al-Qahtani, K. A. Elkamel, and K. Ponnambalam, 2008. Robust optimization for petrochemical network design under uncertainty, *Ind. Eng. Chem. Res.*, 47, 3912-3919.
44. Shavezipur, M., K. Ponnambalam, Khajepour, A., and Hashemi, S. M., 2008. A probabilistic design optimization for MEMS tunable capacitors, *Microelectronics Journal*, (accepted) <http://dx.doi.org/10.1016/j.mejo.2008.03.008>.
43. Shavezipur, M., K. Ponnambalam, Khajepour, A., and Hashemi, S. M., 2008. Fabrication uncertainties and yield optimization in MEMS tunable capacitors, *Sensors and Actuators A: Physical*, (accepted).

42. Alvarez, J. (GS1), K. Ponnambalam, and V. H. Quintana, 2007. Generation and transmission expansion under risk using stochastic programming, *IEEE Transactions on Power Systems*, 22 (3), 1369 – 1378.
41. Khor, C.S., A. Elkamel, K. Ponnambalam, and P. L. Douglas, 2007. Two-Stage Stochastic Programming with Fixed Recourse via Scenario Planning with Economic and Operational Risk Management for Petroleum Refinery Planning under Uncertainty, *Chemical Engineering and Processing: Process Intensification*, <http://dx.doi.org/10.1016/j.cep.2007.09.016>
40. Kamali, M (GS1), K. Ponnambalam, and E. Soulis, 2007. Computationally efficient calibration of WATCLASS hydrologic models using surrogate optimization, *Hydrology and Earth System Sciences*, 4, 2307-2321.
39. Mousavi, S (VS). J., K. Ponnambalam, and F. Karray, 2007. Infereing rules for reservoir operations using fuzzy regression and ANFIS, accepted in *Fuzzy Sets and Systems*, 58 (10), 1064-1082.
38. Ganji, A. (VS), Khalili, D, Karamouz, M, Ponnambalam K, and Javan M., 2007. A fuzzy stochastic Dynamic Nash Game analysis of policies for managing water allocation in a reservoir system, accepted in *Water Resources Management*, doi: 10.1007/s11269-006-9143-y
37. Zhang, Joyce Li, and K. Ponnambalam, 2006. Hydro energy management optimization in a deregulated electricity market, *Optimization and Engineering*, 7(1), 47-61.
36. Hanafizadeh, P., A. Seifi and K. Ponnambalam, 2006. Primal and dual robust counterparts of uncertain linear programs: An application to portfolio selection, *Journal of Industrial Engineering International*, 2(1), 38-52.
35. Ganji, A., K. Ponnambalam, D. Khalil, M. Karamouz, 2006. Grain Yield Reliability Analysis with Crop Water Demand Uncertainty, *Stochastic Environmental Risk Assessment*, Volume: 20, Issue: 4, May 2006, pp. 259 – 277.
34. Mousavi, S. J., F. Karray, K. Ponnambalam, 2006. A Dynamic Programming Model Coupled with a Fuzzy Rule Base for Optimal Operation of Reservoir Systems, *International Journal of Civil Engineering*, Vol. 3 (3), 76-86.
33. Ganji, A., K. Ponnambalam, D. Khalil, M. Karamouz, 2006. A new stochastic optimization model for deficit irrigation, *Irrigation Science*, Vol 25, 1, 63-73.
32. Zhang, J. L. (GS), K. Ponnambalam, 2005. Stochastic control for risk under deregulated electricity market – a case study using a new formulation, *Canadian J. of Civil Engineering*, 32, 719-725.

31. Mousavi, S. J., K. Ponnambalam, and F. Karray, 2005. Reservoir operation using a dynamic programming fuzzy rule-based approach, *Water Resources Management*, 19(5),655-672.
30. Shakshuki, E. (GS) , K. Ponnambalam, and J. Vlach, 2005. Inverse-free second moment method for electrical systems with uncertain parameters, *Intl' J. of Circuit Theory and Appl.* 33(2), 135-145.
29. Stijnen, J., A.W. Heemink, and K. Ponnambalam, 2003. Higher order numerical integration of stochastic water quality models, *Water Resources Research*, 39(3),1053-1061.
28. Ponnambalam, K., F. Karray and S. Mousavi, 2003. Minimizing Variance of Reservoir Systems Operations Benefits using Soft Computing Tools, *J. of Fuzzy Sets and Systems*, 139(2), 451-461.
27. Sadjadi S.J. (GS), and K. Ponnambalam , 2002. An algorithm to determine the steady state of water resource regulation problems, *International Journal of Engineering Science*, 13(5), 41-48.
26. Shakshuki, E (GS) and K. Ponnambalam, 2002. An automatic formulation of inverse free second moment method for algebraic systems, *Reliability Engineering and System Safety*, 76(1), 81-89.
25. Shakshuki, E, (GS) K. Ponnambalam, and Tassew Wodaj (GS), 2002. Risk Assessment in Environmental Systems, *Canadian J. of Civil Engineering*, 29(1), 1-7.
24. Ponnambalam, K. F. Karray and S. J. Mousavi, 2002. Optimization approaches for reservoir system operation using computational intelligence, *Journal of Systems Analysis, Modeling and Simulation*, 42,1347-1360.
23. J.G.M. Schoenmakers, A.W. Heemink, K.Ponnambalam, and P.E. Kloeden, 2002. Efficiency of variance reduction for Monte Carlo simulation of stochastic environmental models, *Applied Mathematical Modelling*, 26, 785-795.
22. Ponnambalam, K., A. Seifi, and J. Vlach, 2001. Probabilistic design of systems with general distributions of parameters, *Intl' J. of Circuit Theory and Appl.*, 29(6), 527-536.
21. Seifi, A., (PDF), K. Ponnambalam, and J. Vlach, 2000. Maximization of manufacturing yield of systems with arbitrary distributions of component values, *Annals of Operations Research*, 99, 373-383.

20. Ponnambalam, K., S. Mousavi, F. Karray, 2000. Regulation of Great Lakes Reservoirs by a Neuro-Fuzzy Optimization Model, *Journal of Computing Anticipatory Systems*, 9, 272-285.
19. Venema, H., P. H. Calamai, and K. Ponnambalam, 2000. Multi-objective spatial design of rural bio-mass energy, *Journal of Environmental Studies and Policy*, 3(1), 1-19.
18. Seifi, A., (PDF), K. Ponnambalam, and J. Vlach, 1999. A unified approach to statistical design centering of integrated circuits with correlated parameters, Special Darlington Issue of *IEEE Transactions on Circuits and Systems, I Fundamental Theory*, 46(1), 190-196.
17. Seifi, A., (PDF), K. Ponnambalam, and J. Vlach, 1999. Probabilistic design of integrated circuits with correlated parameters, *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, 18(8), 278-283.
16. Sadjadi S.J. (GS/Ph.D), and K. Ponnambalam, 1999. Advances in trust region algorithms for constrained optimization, *Applied Numerical Mathematics*, 29(3), 423-443.
15. Fletcher, S (GS/Ph.D.), and K. Ponnambalam, 1998. A constrained state formulation for the stochastic control of multi-reservoir systems, *Water Res. Res.*, 34(2), 257-270.
14. Pokharel, S.(GS/M.A.Sc.), and K. Ponnambalam, 1997. Investment planning for electricity generation expansion, *Int'l JI. of Energy Research*, 21, 185-194.
13. Fletcher, S (GS/Ph.D.), and K. Ponnambalam, 1996. Estimation of reservoir yield and storage distributions using moments analysis, *Jl. of Hydrology*, 182, 259-275.
12. Ponnambalam, K., and Barry J. Adams, 1996. Stochastic optimization of multi-reservoir systems using a generic algorithm - A South Indian case study, *Water Resources Research*, 32(3), 733-741.
11. Fletcher, S (GS/Ph.D.), and K. Ponnambalam, 1996. Stochastic control with bounded sample paths: An application to reservoir systems, *Stochastic Hydraul. and Hydrol*, 10, 167-186.
10. Curi, R.C.(GS2/Ph.D.), T.E. Unny (late), K.W. Hipel, and K. Ponnambalam, 1995. Prediction of the meteorological effects in tidal induced flow using a distributed parameter filter, *Stoch. Hydr. and Hydrol*, 9, 13-32.
9. Curi, W.F. (PDF), and K. Ponnambalam, 1993. Introductory probabilistic and stochastic analysis and design of circuits, Special Issue of the *IEEE Transactions on*

Education: Computation and Computers in Electrical Engineering Education, 36(1), 51-56.

8. Ponnambalam, K., and Wilson F. Curi (PDF), 1992. Comment on "On the meaning of randomness in stochastic environment models" by Zielinski, *Water Resources Research*, 28(4), 1187-1189.

7. Ponnambalam, K., A. Vannelli and S. Woo, 1992. An interior point implementation for solving large planning problems in the oil refinery industry, *Can. J. of Chem. Engrg*, 70(2), 368-374.

6. Ponnambalam, K., V.H. Quintana and A. Vannelli, 1992. A fast algorithm for power system optimization problems using an interior point method, *IEEE Trans. on Power Systems*, 7(2), 892-899.

5. Kumar, P.(GSS/M.A.Sc.), T.E. Unny and K. Ponnambalam, 1991. Stochastic partial differential equations in groundwater hydrology, Part 2: Application to Borden Aquifer, *Stochastic Hydraulics and Hydrology*, 5, 239-251.

4. Ponnambalam, K., E. A. McBean and T.E. Unny, 1990. Impacts of meteorological variations on acid rain abatement decisions, *ASCE J. of Environ. Engrg*, vol 116, no.6, 1063-1075.

3. Phatarfod, R.M., T.E. Unny and K. Ponnambalam, 1990. Predicting cumulative sediment deposition in large reservoirs using an addictive Markov chain model, *Stochastic Hydraulics and Hydrology*, 4, 241-251.

2. Ponnambalam, K., A. Vannelli, and T.E. Unny, 1989. An application of Karmarkar's interior-point linear programming algorithm for multi-reservoir operations optimization, *Stochastic Hydraulics and Hydrology*, 3, 17-29.

1. Ponnambalam, K., and Barry J. Adams, 1989. Comment on 'Error analysis of conventional discrete and gradient dynamic programming' by P.K. Kitanidis and Efi Foufoula-Georgiou, *Water Resources Research*, 24(6),888-889.

Publications in Trade Journals

2. Vempati, Sree Padma (GS), and K. Ponnambalam, 2003. Peer-to-Peer Computing Database Adapter, *Dr.Dobb's Journal*, September, 38-42.

1. Veldhuizen, T. (UG), and K. Ponnambalam, 1996. Linear algebra with C++ template metaprograms, *Dr.Dobb's Journal*, August, 96, 38-44.

Chapters in Refereed Books

12. Ponnambalam, K. Forensic analysis of time series, *Dynamic Modeling of Urban Water Systems, Monograph 18* Computational Hydraulics International Publications, pp. 463-469, Toronto, Ontario, Canada 2010.
11. Mahootchi, M. (GS1), Tizhoosh, H.R. and K. Ponnambalam, 2008. Opposition mining in reservoir management, in *H.R. Tizhoosh, M. Ventresca (Eds.): Oppos. Concepts in Comp. Intel., Springer-Verlag, SCI 155*, pp. 299-321.
10. Mahootchi, M. (GS1), Tizhoosh, H.R. and K. Ponnambalam, 2007. Reservoir Operation Optimization by Reinforcement Learning. Chapter 8 in *Contemporary Modeling of Urban Water Systems, Monograph 15*, CHI Publ., 165-184.
9. Zhang, C. (GSS), K. Ponnambalam and P. Calamai, 2006. A Study on Urban Water Reuse Management Modeling, Monograph 14, Computational Hydraulics Int. Publication, Guelph, Canada.
8. Venema, H. D., Calamai, P. H., Ponnambalam, K., 2003. "Spatial Design of Rural Biomass Energy" Chapter 13 in Dutt, A., Noble, A., Venugopal, G., and Subbiah, S. (eds) *Challenges to Asian Urbanization in the 21st Century*, Kluwer, London.
7. Ponnambalam, K., Nirupama, H. Venema, 2002. Wetlands management using geographical information systems and multi-criteria evaluation tool, CHI Publications, Best Modeling Practices for Urban Water Systems, Monograph 10 pp. 215-224, Toronto, Ontario, Canada.
6. Ponnambalam, K, and S. J. Mousavi, 2000. Water quality management using a Fuzzy Inference System, Chapter *Water quality management*, Computational Hydraulics Int. Publications, Canada
5. Ponnambalam, K., (accepted in 1999). Optimization in water reservoir systems, in *Handbook of Applied Optimization*, (Eds). Panos M. Pardalos and Mauricio G. C. Resende, Oxford University Press. (Published in 2002)
4. Logan, L., L. Zhang, and K. Ponnambalam, 1999. A Bootstrap Approach and Reliability of Time Varying Design. L., Chapter 20 in *New Applications in Modeling Urban Water Systems - Monograph 7*, Computational Hydraulics Int. Publications, Canada.
3. McBean, E.A., K. Ponnambalam, and W.F. Curi (PDF), 1998. Stochastic Environmental Modelling, in *Environmental Data Management* (Eds) N.B. Harmancioglu, et al., Kluwer Publ, Chapter 8.
2. Ponnambalam, K., and R. M. Phatarfod, 1996. Update of Consolidated Frequency Analysis, in *Stormwater Management Techniques*, Chapter 10, (Ed.) W. James, Computational Hydraulics Int. Publications, Canada.

1. Ponnambalam, K. Water quality control under uncertainty, 1995, in *Modern Methods for Modelling the Management of Stormwater Impacts*, (Ed.) W. James, Computational Hydraulics Int. Publications, Canada.

Publications in Refereed Conference Proceedings

54. Eajal, A. (GS1), Shaaban, M., F., Ponnambalam, K., and ElSaadany, F., E." Fuzzy Logic-Based "Charging Scheme for Electric Vehicles Plugged in a Smart Grid, IEEE International Conference on Smart Energy Grid and Engineering, March 23 2015 (published).

53. Eajal, A. (GS1), Shaaban, M., F., Ponnambalam, K., and ElSaadany, F., E." Stochastic Energy Coordination in Hybrid AC/DC Smart Grids , the 2015 IEEE Electrical Power and Energy Conference (EPEC), March 15 2015 (published).

52. Eajal, A.(GS1), Elrayani, Y., Ponnambalam, K., and ElSaadany, F., E." Two-Stage Stochastic Power Generation Scheduling in Microgrids", the 2014 Canadian Conference on Electrical and Computer Engineering (CCECE2014), Toronto, May 2014 (published).

51. Narayan, A.,(GS) K. W. Hipel, K. Ponnambalam and S. Paul. Neuro-Fuzzy Inference System (ASuPFuNIS) Model for Intervention Time Series Prediction of Electricity Prices, IEEE Systems, Man and Cybernetics International Conference 2011, Anchorage, Alaska. October 9-12, 2011

50. Deitra, S., K. Ponnambalam, F. Karray, Artificial Intelligence Modeling of Financial Profit and Fraud, Int'l Conf of Financial Engineering, July 2011, London, U.K. (Best Student Paper Award of The 2011 International Conference of Financial Engineering)

49. Ponnambalam, K., M.Mahootchi, D. Burn, Comparison of probabilistic methodologies for flow regulation, Conference on Probabilistic Methodologies in Water and Wastewater Engineering, Toronto, September 23-24, 2011

48. Narayan, A. (GS), F. Karray and K. Ponnambalam. Neuro-Fuzzy (m-ANFIS) Based Technique for Load Forecasting in Large Geographical Area: Ontario, Canada , 35th National Systems Conference 2011, 9-11th, December, 2011, Indian Institute of Technology, Bhubaneshwar, Orissa, India (WON THE BEST PAPER OF THE SESSION AWARD)

47. Narayan A. (GS), and K. Ponnambalam. Extreme Value Analysis using Stochastic Differential Equations, Conference on Probabilistic Methodologies in Water and Wastewater Engineering, Toronto, September 23-24, 2011

46. Narayan, A. (GS), K. W. Hipel, K. Ponnambalam and S. Paul. Neuro-Fuzzy Inference System (ASuPFuNIS) Model for Intervention Time Series Prediction of

Electricity Prices , IEEE Systems, Man and Cybernetics International Conference 2011, Anchorage, Alaska. October 9-12, 2011

46. Ponnambalam, K., Y. El-Rayani (GS1), M. Mahootchi (GS1), and A.W. Heemink, 2010. Comparison of methods for battery capacity design in renewable energy systems for constant demand and uncertain supply, Proceedings of 7th Conf. on European Energy Market, Madrid, June 23-25, 4 pages.

45. El-Rayani, Y.,(GS1) K. Ponnambalam, R. A. El-Shatshat, Stochastic Analysis of a Local Distribution Company Voltage Profile Under Uncertain Energy Supply from a Photovoltaic System, Conference of European Energy Markets, EEM10, Madrid, Spain, June 2010, 4 pages.

44. Dorai, A. (GS), K. Ponnambalam, 2010. Automated epileptic seizure onset detection, Proc. Int'l conf. on Autonomous Intelligent Systems, Povo de Varzim, Portugal, June 21-23, 2010, 4 pages.

43. Sayed Alireza Sadrossadat (GS3), Mino Mirsaedi (GS3), Kumaraswamy Ponnambalam and Mohab Anis, 2009. Framework for Statistical Design of a Flip-Flop, The 16th IEEE International Conference on Electronics, Circuits and Systems , Dec 13-16, Hammamet, Tunisia.

42. Dorai, A. (GS), K. Ponnambalam, A.W. Heemink, 2009. Yield optimization of electrical circuits, Third International Conf. on Signals, Circuits, and Systems, Nov 6-8, Jerba, Tunisia.

41. Yousef El-Mabruk Saad (GS1), M. M. A. Salama, R. A. Elshatshat*, K. Ponnambalam, 2009. Distribution company operation under uncertainty: An overview, Proc. of IEEE Power Engineering Society Conference, July 26-30, Calgary.

40. Fletcher, S.G. and K. Ponnambalam, 2008. Reservoir design optimization using new storage moments equations, Proc. Water Down Under 2008 Conference, Adelaide, Australia, ISBN 0-858-25735-1, 1762-1780.

39. Alvarez, J. L.(GS1), K. Ponnambalam, V. H. Quintana, 2007, Electricity markets under uncertainty, in IEEE Proceedings of the 2007 Power Tech Conference (CD), École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland, 1-5 July 2007, pp. 1-5.

38. Vallamsundar, B (GS), Zhu, J., K.Ponnambalam, C. Huang, A. Srinivasan, and B. Cheng, 2007, Adaptation to Congestion with Intelligent Systems under Dynamic Weather Conditions, Int'l Symp. on Signals, Systems, and Elect. (ISSSE 2007), Montreal, July 30 – Aug 02.

37. Mahootchi, M (GS1), Hamid R. Tizhoosh, and K. Ponnambalam, 2007, Opposition-Based Reinforcement Learning in the Management of Water Resources, Proc. of

IEEE Symp. on Appro. Dynamic Programming and Reinforcement Learning (ADPRL 2007), Hawaii, April 1-5, 2007

36. Alvarez, J. L.(GS1), K. Ponnambalam, V. H. Quintana, 2007, The investor's dilemma: Generation or transmission expansion? in IEEE Proc. of the 20th Canadian Conf. on Elect. and Comp. Eng. CCECE 2007 (CD), Canada, 22-26 April 2007, pp. 1-5.

35. Al-Qahtani, K., A. Elkamel, and K. Ponnambalam, 2007, Robust MINLP Optimization Model for Petrochemical Network Design using a Hybrid Stochastic-Probabilistic Approach, Euro. Cong. of Che. Eng. -6, Copenhagen, Sept 16-21, 2007.

34. Eapen , A.G., K. Ponnambalam , J. F. Arocha , R. Shioda , T. F. Smith , J. Poss , J. Hirdes, 2006, Data mining in mental health, Proceedings of the 17th IASTED international conference on Modelling and simulation Montreal, Canada, Pages: 122 - 127.

33. Alvarez, J. L.(GS1), K. Ponnambalam, V. H. Quintana, 2007. Electricity markets under uncertainty, in IEEE Proceedings of the 2007 Power Tech Conference (CD), 'Ecole Polytechnique F'ed'erale de Lausanne, Lausanne, Switzerland, 1-5 July 2007, pp. 1-5.

32. Vallamsundar, B (GS), Zhu, J., K.Ponnambalam, C. Huang, A. Srinivasan, and B. Cheng, 2007, Adaptation to Congestion with Intelligent Systems under Dynamic Weather Conditions, Int'l Symp. on Signals, Systems, and Elect. (ISSSE 2007), Montreal, July 30 - Aug 02.

31. Mahootchi, M (GS1), Hamid R. Tizhoosh, and K. Ponnambalam, 2007. Opposition-Based Reinforcement Learning in the Management of Water Resources, Proc. of IEEE Symp. on Appro. Dynamic Programming and Reinforcement Learning (ADPRL 2007), Hawaii, April 1-5, 2007

30. Alvarez, J. L.(GS1), K. Ponnambalam, V. H. Quintana, 2007, The investor's dilemma: Generation or transmission expansion? in IEEE Proc. of the 20th Canadian Conf. on Elect. and Comp. Eng. CCECE 2007 (CD), Canada, 22-26 April 2007, pp. 1-5.

29. Al-Qahtani, K., A. Elkamel, and K. Ponnambalam, 2007, Robust MINLP Optimization Model for Petrochemical Network Design using a Hybrid Stochastic-Probabilistic Approach, Euro. Cong. of Che. Eng. -6, Copenhagen, Sept 16-21, 2007.

28. Shavezipur, M., Ponnambalam, K., Khajepour, A., and Hashemi, S. M., 2006, Sensitivity Analysis in Yield Optimization of MEMS Tunable Capacitors, Proc. of ASME Inte'l Mech. Eng. Cong. and Expo., Chicago, Nov. 5-10, 2006, pp. 1-8.

27. Alvarez, J. L.(GS1), K. Ponnambalam, V. H. Quintana, 2006, Transmission expansion under risk using stochastic programming, in IEEE Proceedings of the 9th International Conference on Probabilistic Methods Applied to Power Systems (CD),

Royal Institute of Technology, Stockholm, Sweden, 11–15 June 2006, pp. 1–7.

26. Ponnambalam, K. Design Optimization Under Uncertainty, *Invited Lecture*, 15th APD-IAHR Conference, Indian Inst. of Technology-Madras, Chennai, India, Aug 7 2006, Invited Lectures Volume, 4-10.

25. Juan Alvarez L.(GSS), K. Ponnambalam, V. H. Quintana, 2005. Generation Expansion under Risk Using Stochastic Programming, Proceedings of North American Power Symposium (NAPS), 2005, Ames, Iowa, 530-537.

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22. Logan, L., K. Ponnambalam, Nirupama, and Belore, H., 2003. Evaluating Performance Sensitivity of a Water Balance Model, Proc. of Canadian Society for Civil Engineering Conference, Burlington, Ontario, Oct 22-24.

21. Xu, J. (GS1), S.P. Vempati (GS), and K. Ponnambalam, 2003. Modeling and resource allocation for e-businesses, International Conference on Control and Automation, Montreal, 81–84.

20. Xu, J. (GS1), S.P. Vempati (GS), M. Kamel, and K. Ponnambalam, 2002. Symbolic data mining using self-organizing map, Proc. of Int'l Conf. on Control and Automation, Xiamen, China, 1159-1163.

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17. Ponnambalam, K., J. Wojciechowski, J. Vlach, 2001. A Hybrid Method for Optimal Design with General Distributions, Proc. of European Conference on Circuit Theory and Design, ECCTD01, Volume 3, 385-388, Helsinki, Finland.

16. Ponnambalam, K., A. W. Heemink, and S. Fletcher. Research and development for management of water resources: Modernizing the teaching of water resources management, in the Proc. of Integrated Water Resources Management for

Sustainable Development, R. Mehrotra, B. Soni, K.K.S. Bhatia (eds.), Ajay printers and publishers, Dec 2000, New Delhi, pp. 41-51.

15. S. Muthanna, K. Kontogiannis, K. Ponnambalam, B. Stacey, 2000. A Maintainability Model for Industrial Software Using Design Level Metrics, In Proceedings of IEEE Working Conference on Reverse Engineering (WCRE2000), Brisbane Australia, November 2000 pp. 248-255 (Acceptance rate 35%)
14. Ponnambalam, K., and B. Stacey, 1999. Modelling Reliability and Maintainability of Large-Scale Object-Oriented Software Systems, Companion Proceedings of Object-Oriented Programming Systems, Languages, and Applications, (OOPSLA99), Denver, U.S.A.
13. Seifi, A., J. Vlach, . and K .Ponnambalam, K, 1998. Statistical design of integrated circuits using maximum likelihood estimation of the covariance matrix, ISCAS '98. Proceedings of the 1998 IEEE International Symposium on , Volume: 6 , 338 –341.
12. Ponnambalam, K., A.W. Heemink, and J.G.M. Schoenmakers, 1997. Estimation of risk in environmental systems, in Measurements and Modelling in Environmental Pollution, Eds. R. San Jose, and C.A. Brebbia., Computational Mech. Publ., 13-21.
11. Ponnambalam, K., Kalai S. Kalaichelvan, Nishit Goel, and Rama Munikoti, 1996. Analyzing sensitivities of software qualities to various metrics, Proceedings of Sixth International Conference on Software Quality, October 28-30.
10. Curi, W.F. (PDF), K. Ponnambalam, and E. A. McBean, 1994. Uncertainty analysis in global carbon-dioxide modelling, *Stochastic and Statistical Modelling with Groundwater and Surface Appl.*,(Ed.)K. W. Hipel, Kluwer Publ., 325-337
9. Adams, B.J., and K. Ponnambalam, 1994. An algorithm for determining closed-loop operations policies for multi-reservoir systems, *Effective Environ. Mgt. for Sustainable Development*,(Ed.) K. W. Hipel and L. Fang, Kluwer Publ., 389-396.
8. K. Ponnambalam, D. Thangaraj (PDF), and C. Thamayanthi, 1994. Estimating mean and covariance of a set of algebraic linear equations, *Stochastic and Statistical Modelling with Groundwater and Surface Appl.*,(Ed.) K. W. Hipel, Kluwer Publ., 301-307.
7. Curi, R.C.(GSS/Ph.D.), T.E. Unny (late), K.W. Hipel, and K. Ponnambalam, 1994. Application of a distributed parameter filter to predict simulated tidal induced shallow water flow, *Stochastic and Statistical Modelling with Groundwater and Surface Appl.*, (Ed.) K. W. Hipel, Kluwer Publ., 211-223.
6. Zielinski, P. A., and K. Ponnambalam, 1994. Computational methods in stochastic river water quality modeling, *Stochastic and Statistical Modelling with Groundwater and Surface Appl.*,(Ed.) K. W. Hipel, Kluwer Publ., 187-195.

5. Singh, A.(GS/M.A.Sc.), K. Ponnambalam, and A. Vannelli, 1992. Finding netlist partitions using Interior point methods, *Proc. CCVLSI92*, Halifax, October 1992.
4. Curi, W. (PDF), and K. Ponnambalam, 1992. Computer-Aided-Design software development for probabilistic analysis and design of circuits, *Proc. CCECE*, Toronto, Sept 1992.
3. Ponnambalam, K., V.H. Quintana, and A. Vannelli, 1990. A fast dual affine implementation for power systems optimization, PICA 91, *Proc. Seventeenth Power Industry Computer Applications Conference*, May, 1991, Baltimore.
2. Ponnambalam, K., A. Vannelli, E.A. McBean, and T.E. Unny, 1989. Solving large-scale electric energy production planning and pollution control problems with Karmarkar algorithms, *Resource Planning Under Uncertainty for Electric Power Systems*, (Eds.) G. Dantzig and P. Glynn, Stanford University, CA, pages 179-196. (INVITED).
1. Ponnambalam, K., and B. J. Adams, 1985. Models for stress coefficient due to moisture deficit and irrigation scheduling, *Advances in Evapotranspiration*, ASAE Publ. 14-85, 268-275.

Publications in conference proceedings (FULL PAPER)

8. Logan, L., and K. Ponnambalam, 2001. Reliability based water quality design, *Proc. of IEEE Conf. on Systems, Man, and Cybernetics*, Tucson, Arizona.
7. Logan, L., and K. Ponnambalam, 2000, Risk in quality violations under uncertainty, *Proc. of IEEE Conf. on Systems, Man, and Cybernetics*, Nashville, 531-535.
6. Perla, J. (URA), and K. Ponnambalam, 1994. Multi-reservoir systems simulation using C++ and Object-Oriented Programming, *Proc. of ASCE National Meeting*, Buffalo, 1030-1034.
5. Fletcher, S. (GS/Ph.D.), and K. Ponnambalam, 1994. Stochastic control with bounded sample paths, *Proc. of ASCE National Meeting*, Buffalo, 1025-1029.
4. Bessa, M. (GS1/Ph.D.), K. Ponnambalam, and A. Bogobowicz, 1994. Multi-reservoir systems optimization by the aggregation/decomposition methodology, *Proc. of ASCE National Meeting*, Buffalo, 192-196.
3. Ponnambalam, K, 1993. Mathematical modelling of educational quotas-by-caste and its effects, *Proc., of First Annual Meeting of the Internet Group Soc.Culture.Tamil*, Waterloo.

2. Ponnambalam, K. , and A. Vannelli, 1993. Forcing a vertex optimal solution in interior point methods using an auxiliary function, Proc. of APMOD93, Budapest, 463-470 (INVITED).

1. Phatarfod, R.M., T.E. Unny, and K. Ponnambalam, 1990. On the problem of sediment deposition in large reservoirs, Proc. of ASCE 1990 Nat. Conf.on Hydraul. Engg., San Diego, CA, pages 469-474.

Conference presentations

48. Sun F.(GS1), K. Ponnambalam, S. Cao, A. Zielinski.. A Holistic Framework for Analysing general failure and safety problems, 2015 AMMCS-CAIMS Congress, Waterloo, Canada, June 7 - 12 2015

47. Sawh, D. (GS), K. Ponnambalam, Machine learning: modeling risky behaviour in financial fraud detection, 2015 AMMCS-CAIMS Congress, Waterloo, Canada, June 7 - 12 2015.

46. Farahani, M.(GS1), M. Pavlin, K. Ponnambalam, Service revenue management in the presence of grouping complementarities, CORS-INFORMS International Meeting, Montreal, Quebec, Canada, June 14-17, 2015.

45. Narayan, A. (GS), K. Ponnambalam, Spatial dependence modeling and allocation of wind re-sources using C-Vine copulas and value-at-risk, 2015 AMMCS-CAIMS Congress, Waterloo, Canada June 7 - 12 2015.

44. Sun, F.(GS1), K. Ponnambalam, Sheree Pagsuyoin, Chlorophyll-a Modeling with Support Vector Regression in Taihu Lake of China, IAGLR conference, Hamilton, May 2014.

43. Sun, F.(GS1), Sheree Pagsuyoin, Kumaraswamy Ponnambalam, and Keith Hipel. (2013). Time Series Modeling on 1998-2006 Chlorophyll-a in Taihu Lake, China. CHI's International Conference on Stormwater and Urban Water Systems Modeling, Toronto, Canada

42. Wietse, B., A. Scott, K. Ponnambalam, Use of surrogate model to optimize flow through a turbulent channel, Sixth Int'l Conf. on Water and Environ. Research, Koblenz, June 2013.

41. Mahootchi, M. (GS1), K. Ponnambalam, and D. Burn. Great Lakes water level regulation using risk-based optimization methods, IAGLR Conference, Cornwall, May 2012.

40. Narayan, A.(GS), and K. Ponnambalam. Model based extreme value analysis and its application in Great Lakes, IAGLR Conference, Cornwall, May 2012.

39. Mahootchi, M. (GS1), K. Ponnambalam, and D. Burn. Great Lakes water level regulation using risk-based optimization methods, IAGLR Conference, Cornwall, May 2012.
38. Deitra, S. (GS), K. Ponnambalam, F. Karray, Artificial Intelligence Modeling of Financial Profit and Fraud, Int'l Conf of Financial Engineering, July 2011, London, U.K. **(Best Student Paper Award of The 2011 International Conference of Financial Engineering)**
37. Narayan, A. (GS), and K. Ponnambalam, Stochastic Two-Stage Programming for Network Design under Uncertainty as Min-Cost Multicommodity Network Flow, Graduate Student Research Conference 2011, April 25-28, 2011, University of Waterloo, Waterloo, ON, Canada
36. Kamali, M. (GS1), A. Narayan (GS) and K. Ponnambalam, Parameter Estimation in Groundwater Models using Surrogate Optimization, 46th Central Canadian Symposium on Water Quality Research 2011, Feb 22-23, 2011, Canada Centre for Inland Waters, Burlington, ON, Canada
35. K. Ponnambalam, Forensic analysis of time series, Storm water modelling conference, Feb 2009, Toronto.
34. Vallamsundar, B. (GS1), K. Ponnambalam, Congestion control for adaptive satellite communication systems using intelligent systems, INFORMS Telecom conference, College Park, U.S.A., March 2008.
33. Dorai, A. (GS), K. Ponnambalam, 2009. Epileptic seizure prediction models using classification methods, CORS-INFORMS Conference, June 14-17, 2009, Toronto. (INVITED)
32. Mahootchi, M. (PDF), K. Ponnambalam, 2009. Warehouse management problem using nonlinear models, CORS-INFORMS Conference, June 14-17, 2009, Toronto.
31. Yousef El-Mabruk Saad (GS1), K. Ponnambalam, R. A. El-Shatshat, and M. M.A. Salama, 2009. Distribution company power procurement under uncertainty of DG operation, CORS-INFORMS Conference, June 14-17, 2009, Toronto.
30. Ponnambalam, K., P. Hanafizadeh and Abbas Seifi, 2006. Optimal Asset Allocation Under Nonsymmetrically Distributed Returns, Modelling and Optimization: Theory and Applications Conference, July 24-27, Waterloo, Ontario.
29. Cheng Seong Khor, A. Elkamel, K. Ponnambalam, and P. Douglas, 2006. A Hybrid of Stochastic Programming Approaches for Decision-Making in Petroleum Refinery Production-Operations Planning under Uncertainty, Modelling and Optimization: Theory and Applications Conference, July 24-27, Waterloo, Ontario.

28. Sadjadi S.J., Farhang Moghadam and K. Ponnambalam, 2006. A Robust Data Envelopment Analysis Approach for Measuring Efficiency, Modelling and Optimization: Theory and Applications Conference, July 24-27, Waterloo, Ontario.
27. Nirupama, N., K. Ponnambalam, V. Sundar, Risk Assessment of Large Disasters Using Remote Sensing and GIS, Second Canadian Risk and Hazards Network Symposium, November 2005, Toronto.
26. Arocha, J.F., K. Ponnambalam, A. Eapen (GSS), R. Shioda, Comparison of data mining algorithms in the diagnosis of breast cancer, Workshop on Math. Prog. In Data Mining and Machine Learning, June 2005, McMaster University, Hamilton, Canada.
25. Ponnambalam, K., A.G. Eapen (GSS), J.F. Arocha, R. Shioda, T.F. Smith, J. Poss, & J. Hirdes, Data Mining the interRAI Minimum Mental Health Data Set, Workshop on Math. Prog. In Data Mining and Machine Learning, June 2005, McMaster University, Hamilton, Canada.
24. Ponnambalam, K. Extreme value analysis: A state of the art, CORS/INFORMS Joint Conference, Banff, Alberta, May 2004. (INVITED)
23. Ponnambalam, K., K. Srinivasan, J. Mousavi. Generating multi-variate dependence structures using copulas, International Groundwater Quality Conference, Waterloo, July 2004
22. Kamali, M. (GS), K. Ponnambalam, E. Soulis, Development of approximate models of large scale systems using parallel and distributed computing, International Groundwater Quality Conference, Waterloo, July 2004
21. Ponnambalam, K., P. Hanafizadeh, and A. Seifi. A new robust method for probabilistically constrained linear programs, MOPTA04, McMaster University, July 2004.
20. Hanafizadeh, P., Ponnambalam, K., and A. Seifi. Asymmetric correlated uncertainty in portfolio selection problems, Large Scale Optimization Conference, Waterloo, May 2004.
19. Zhang, L (GS) and K. Ponnambalam, Hydro energy management in a deregulated market, McMaster Optimization Conference, August, 2002. (2002: Presentation)
18. Chellathurai, T. (GS), K. Ponnambalam, and T. Dravium, Dynamic portfolio management, McMaster Optimization Conference, August, 2002. (2002: Presentation)

17. Ponnambalam, K., Nirupama, and H. Venema, 2001. Wetlands management using GIS and Multiobjective analysis, Urban Stormwater Modelling Conf., CHI, Feb 2001, Toronto.
16. Ponnambalam, K, 2000. Software Qualities and Quality Assurance in Large-Scale Software Systems, Special invited talk to the Institute for Improvement of Quality and Productivity, Waterloo. (INVITED)
15. Ponnambalam, K, 2000. Modelling a Sustainable City, Twenty First Century Challenges of Urbanization Conference, Chennai, India. (INVITED)
14. Venema, H., P. H. Calamai, and K. Ponnambalam, 2000. Multi-objective spatial design of rural bio-mass energy, Twenty First Century Challenges of Urbanization Conference, Chennai, India.
13. Ponnambalam, K. High-level design optimization of software structures, CSER97 and CASCON97, November 1997, Toronto.
12. K. Ponnambalam, 1997. Object-Oriented design: How to measure good design? INVITED POSITION PAPER at OOPSLA97 Workshop, September 1997, Atlanta, Georgia.
11. Seifi, A., K. Ponnambalam and Jiri Vlach, 1997. Probabilistic Design Optimization Using the AFOSM Reliability Method, presented at SIAM Annual meeting, Stanford University, July 1997.
10. K. Ponnambalam, and S. J. Sadjadi, 1996. Large-scale nonlinear optimization, High-Performance Optimization, TUDelft, Netherlands.
9. Curi, W. (PDF), and K. Ponnambalam, 1992. A comparison of methods of uncertainty analysis for dynamic systems, American Geophysical Union/Canadian Geophysical Union Joint Meeting, Montreal, May.
8. Singh, A.(GS/M.A.Sc.), and K. Ponnambalam, 1992. A comparison of barrier function methods with Lagrangian method for nonlinear programming, 1992 SIAM Conf. on Optimization, May, Chicago, U.S.A.
7. Ponnambalam, K, 1991. An interior algorithm for large-scale nonlinear programming, APMOD91: Applied Math. Prog. and Mod., London, U.K., Jan.
6. Ponnambalam, K, 1990. Large scale nonlinear programming using interior-point and successive linear programming methods, 1990 SIAM Annual Meeting, July '90, Chicago, U.S.A.

5. McBean, E.A. and K. Ponnambalam, 1990. Variability of deposition levels of acid rain contributions in Ontario, Meeting on Computer-Aided Decision Making in Aquatic Resource Management, Can. Conf. for Fish. Res., Jan. 3-4, Ottawa. (INVITED)
4. Ponnambalam, K., T. Alguindigue, and A. Vannelli, 1989. Experiencias con los metodos de Karmarkar, Primer Congreso Nacional, Instituto Mexicano De Sistemas e Investigacion De Operaciones, A. C., Mexico City, Nov.13-14, also available as a working paper in Spanish and English (14 pages). (INVITED)
3. Ponnambalam, K., S. Seetharaman, and T. Alguindigue, 1989. Affine algorithms for L1-minimization, Sixth Workshop on Multidimensional Signal Processing, Monterey, California, U.S.A., Sept 6-8, also available as a working paper(12 pages).
2. Ponnambalam, K., and A. Vannelli, 1989. An inexpensive basis recovery procedure for Karmarkar's dual affine algorithm, Fifth Int'l Conf. on Stochastic Program., Univ. of Michigan, Ann Arbor, Aug 13-18, also available as a working paper (6 pages). (INVITED)
1. Ponnambalam, K., E. A. McBean, and T.E. Unny, 1989. A practical model for acid rain abatement programs in Eastern North America under varying meteorological conditions, Fourth Canadian Seminar in Systems Theory in Civil Engineering, University of Manitoba, May 3-5.

Reports and working papers

16. Ali, M.S. (GS), K. Ponnambalam, and H. D. Venema, 2007. Designing renewable energy systems using life-cycle analysis to Energy, 15 pages.
15. Eapen, Arun G. (GS1) , K. Ponnambalam, J. Arocha, R. Shioda, and J. Hirdes. Data mining in mental health. Tech. Report., Dept. of Systems Design Engineering, 2004, 14 pages.
14. Eapen, Arun G. (GS1), K. Ponnambalam, and J. Arocha. Comparison of data mining algorithms in breast cancer diagnosis, Tech. Report., Dept. of Systems Design Engineering, 2004, 15 pages.
- 123 Ponnambalam, K., and P. Hanafizadeh. Asset allocation using a separable probabilistic robust method, 32 pages. Submitted to the Journal of Quantitative Finance, Aug 2004
12. P. Hanfizadeh, A. Seifi, and K. Ponnambalam. Tuning the robust counterparts of uncertain linear programs, 23 pages, submitted to Operations Research Society Journal, Dec 2004.

11. Ponnambalam, K., A. Seifi, A., and J. Vlach, 2003. Design of electrical systems with general statistical distributions, submitted in Sept 2003 to IEEE Journal of Circuits and Systems, I Fundamental Theory.
10. M. S. Ali (GS), K. Ponnambalam, and H. D. Venema. Designing renewable energy systems using life-cycle analysis, 2003.
9. Eidenzon, D., K. Ponnambalam, P. Mohanavadivu, and B. Stacey, 2000. Software Design Representation, Analysis for Qualities and Transformation, Tech. Rep., Dept. of Systems Design Engineering, University of Waterloo.
8. Ponnambalam, K., R. Chanchlani, A. Singh, S. Kalaichelvan, R. Munikoti and B. Stacey, 2000. Software Componentization: A Helpful Step to Program Understanding?, Tech. Rep., Dept. of Systems Design Engineering, University of Waterloo.
7. Chanchlani, R., K. Ponnambalam, M. Kamel, C-H. Lung, A. Jalnapurkar and B. Stacey, 2000. Software Architecture Recovery Using Partitioning: A Real-World Experience, Tech. Rep., Dept. of Systems Design Engineering, University of Waterloo.
6. Ponnambalam, K., S. Fletcher (GS/Ph.D.), and A.W. Heemink, May 1996 (revised in Dec'96). Can LQG or its derivatives model long-term operations of stochastic reservoir systems? Tech. Rep., Dept. of Systems Design Engineering, University of Waterloo.
5. Sadjadi, S.J., and K. Ponnambalam, 1997. An Application of Extended Lagrangian Function Optimization to a Large Scale Water Resources Management Problem: A Great Lakes Case Study, Tech. Rep., Dept. of Systems Design Engineering, University of Waterloo.
4. Ponnambalam, K., 1997. Characterization and Selection of Good Object-Oriented Design, Position Paper of OOPSLA97, Atlanta, Georgia, Oct 5, 1997.
3. Ponnambalam, K, 1995. Optimal Design of Software Structures, Tech. Rep., Dept. of Systems Design Engineering, University of Waterloo.
2. Nipigon River: Development of a water management plans (Options Rep.), Prepared for Nipigon River Mgt. Committee, Ontario Ministry of Natural Resources, April 1994.
1. Levels Reference Study, Great Lakes-St. Lawrence River Basin, (ANNEX 3 is based on my work with the IJC), Existing regulation, System-wide Regulation and Crises Conditions, International Joint Commission, 1993.

Professional activities and other contributions to engineering

Co-Chairman, Conference on probabilistic design methodologies in water and wastewater engineering, University of Toronto, Sept 2011.

Invited special lectures on “Computational tools for engineering design under uncertainty”, Warsaw University of Technology”, Warsaw, Poland, Jan 2010.

Invited lecture on “Feature detection and diagnostics”, SGGW University, Warsaw, Poland, Jan 2010.

Distinguished performance in Research, Teaching, and Service, Faculty of Engineering Award, University of Waterloo, 2006.

Consultant, Telesat, Ottawa, 2006-2010.

Special session organizer on Data mining in health care, IASTED Modelling and Simulation Conference, Montreal, May, 2006.

Conference Session Chair, Optimization Conference, McMaster University, August, 2002.

Workshop Chair, “Maintainability and Reliability of Large Scale Object-Oriented Systems”, OOPSLA99, Denver.

Founding faculty member of the “Consortium for Software Engineering Research” funded by NSERC and Five Major Corporations in Canada (IBM, OTI, NORTEL, BELL, and MITEL), 1996-Present. (Total funding in order of \$18 Million).

Consultant, Numeric Logic, Waterloo for their ASME Project on Solar Energy Time Series Modelling, 1999.

Member of the Faculty Committee that designed the *Software Option* at the faculty level available to all Engineering Department Undergraduates, 1998-1999.

Member of the Faculty Committee for designing the *Environmental Engineering Program* at the Undergraduate Level and currently a Member of the Board that manages the program at the University of Waterloo, 1990 - 1997.

Invited presentations at the University College, Galway, Ireland, Feb 1997 on “Reservoir Management”, and “C++ for Water Resources Engineers”.

Invited presentation at Technical University of Delft, Mar 1997 on “Why should numerical analysts know C++ and object-oriented programming?”

Member of the Program Committee of "Stochastic and Statistical Methods in Hydrology and Environmental Engineering", an International Conference in Honour of Professor T.E. Unny, Waterloo, June 1993.

Dec 1992 - 1995. Consultant, Nipigon River Watershed Management Study, Atria Engg. Hydraul. Inc., Mississauga, Ont. (a study conducted for the Ministry of Mines and Natural Resources).

Aug 1991 - July 1992. Consultant for the project of "A study of Great-Lakes Water Level Regulation", initiated by the International Joint Commission for Great-Lakes Management and was co-ordinated by the Canada Centre for Inland Waters, Burlington, Ontario (completed in July 1992). This project involved the development of a nonlinear network programming code to solve a large scale problem of approximately 7000 nodes and 70000 arcs, probably one of the largest nonlinear optimization problem ever "solved". (Reported in Levels Reference Study, Great Lakes-St. Lawrence River Basin (Final Report), International Joint Commission, March 1993).

Dec 1991 - Jan 1992. Helped design an *Environmental Engineering Program* for the Universidad de Corobobo, Valencia, Venezuela.

Feb-April 1991 - Visiting Professor, Centre for Water Resources, Anna University, Madras, India.

Jun. 1990 - Present. Individual member of the Institute for Computer Research, University of Waterloo.

Member of the American Society of Civil Engineers Task Committee on "Variational and Probabilistic Approaches to Hydraulics", 1990.

Aug. 1988 - Aug 1992. Consultant for the development of barrier functions code for solving large linear/non-linear refinery production planning problems at the Process Control and System Group of Esso Petroleum, Toronto.

Graduate Supervision Activities of K. Ponnambalam [1990-Present]

Areas of application: ENV – Societal and Environmental Systems; ELEC – Electrical Engineering, SOFT – Software Engineering, FIN – Financial Engineering, HEA – Health, and Multi – Multidisciplinary applications

Name	Degree	Title	Graduation Year	Current Position
P.Kumar (T.E.Unny,SYDE)	M.A.Sc.	Parameter Estimation of Groundwater Problems defined by Stochastic Partial Differential Equations [ENV]	1991	Research Engineer, India
A. Singh	M.A.Sc.	Trust Region Method of Large-Scale Engineering Optimization	1992	CEO, Clove Dental

R. Curi (K.W.Hipel,SYDE)	Ph.D.	using Barrier/Potential Function Models [ENV] An Optimal Distributed Parameter Filter and Predictor for Shallow Water Flow [ENV]	1993	Prof, Brazil
El-Hadi Shakshuki	M.A.Sc.	Probabilistic Systems Analysis for the Estimation of Variances and Covariances [ELEC]	1994	Prof, Halifax
T. Wodaj	M.A.Sc.	Probabilistic Modelling of Contaminant Transport [ENV]	1994	Engr, IBM
S.G. Fletcher	Ph.D.	Stochastic Control of Reservoir Systems [ENV]	1995	Chief Engr and Prof, T&T
W. Curi (K.W.Hipel,SYDE)	Post-Doc	Stochastic Analysis of Large scale Systems [ENV/ELEC]	1993	Prof, Brazil
T. Dravia (N. Thomson, CIVE)	Post-Doc	Probabilistic Analysis of Algebraic Equations [ENV]	1994	Consultant, Waterloo
R. Unny	M.A.Sc.	Application of Stochastic Partial Differential Equations to Contaminant Transport [ENV]	1996	Engr, Siemens
J. Sadjadi	Ph.D.	Nonlinear Optimization using an Expanded Lagrangian Function for Water Resources Management Problems [ENV]	1997	Prof, Iran
S. Muthanna	M.A.Sc.	Assessment of Maintainability Models for Industrial Software Systems using Design Level Metrics [SOFT]	1997	Engr, USA
M. Possmayer	M.A.Sc.	Optimal Groundwater Remediation under Parameter Uncertainty [ENV]	1998	UN
R. Chanchlani	M.A.Sc.	Software Architecture Recovery and Design using Partitioning Techniques [SOFT]	1998	Engr, Flextronics, Toronto
S.Kalyana-sundaram	M.A.Sc.	Software Architecture Recovery and Assessment of a Telecommunication System [SOFT]	1998	Engr, RIM
R. Paramanathar	M.A.Sc.	Distributed Design Patterns in Parallel Processing for Dynamic Programming Applications [SOFT]	1998	Engr, Bellview
M Bessa	Ph.D.	Optimization of the Operation of Multireservoir Systems: A Great-	1998	Engr, Brazil

T. Chellathurai	M.A.Sc.	Lakes Case Study [ENV] Dynamic Optimization of Consumption and Portfolio Selection [FIN]	1999	BMO Risk Group, Toronto
M. Sadek Ali	M.A.Sc.	Planning Renewable Electricity using Life Cycle Analysis [ENV]	1999	Grad. Student, TO
P. Mohanavadivu (J. Vlach, ECE)	Post-Doc	Reliability Analysis of Large-Scale Systems [Multi]	1999	Engr, TO
A. Vassighi	M.A.Sc.	Efficient Treatment of Feasibility Constraints in Partitioning using Genetic Algorithms [Multi]	2000	Engr, Dallas
V. Vanghani	M.A.Sc.	Protein Docking using Shape Complimentarity and Electrostatics [Multi]	2000	Engr
S. Sivakumaran	M.A.Sc.	Distributed Image Processing on the Internet [Multi]	2000	CEO, Callture
T. Mei	M.A.Sc.	Automation of Business Logic in Web Applications [SOFT]	2001	Engr, Caprion
S. Vempati	M.A.Sc.	A Database Adapter for Peer-to- Peer Systems [SOFT]	2002	Mgr, Blackberry
J. Xu	M.A.Sc.	Dynamic Rate Allocation in WCDMA System using Fuzzy Logic [ELEC]	2002	Engr, Hughes Wirless, USA
P.Kohli	M.A.Sc.	Visualization Tool for Life-Cycle Analysis [ENV]	2002	Engr, TO
T. Chellathurai	Ph.D.	Dynamic Portfolio Management under Transaction Costs [FIN]	2003	BMO Risk Group, Toronto
J. Zhang	M.A.Sc.	Hydro Energy Mangement in Deregulated Markets [ENV]	2003	Engr,Bantrel, TO
K. Bellamkonda	M.A.Sc.	Architecture and Evaluation of Seamless Vertical Handoffs in Heterogeneous Wireless Networks [ELEC]	2003	Motorola, Chicago
A. George	M.A.Sc.	Application of Data Mining in Medical Applications [HEA]	2004	NCR, Waterloo
P. Pedarla	M.A.Sc.	E-Intelligence Form Design and Data Preprocessing in Health care [HEA]	2004	Consultant, USA
C. Zhang (P. Calamai, SYDE)	M.A.Sc.	A Study on Urban Water Reuse Management Modelling [ENV]	2004	Engr, TO
S. Vallamsundar (G. Cascante, CIVE)	M.A.Sc.	Numerical evaluation of classification techniques for flaw detection	2007	Ph.D. Student, Chicago
B. Vallamsundar	M.A.Sc.	Congestion control for adaptive	2007	Engr, India

(J. Vlach, ECE)		satellite communication systems with intelligent systems		
J. Alvarez (V. Quintana, ECE)	Ph.D.	Risk minimization in power system expansion and power pool electricity markets	2007	Professor, Mexico
A. Dorai	M.A.Sc.	Automated epilepsy seizure onset detection	2009	Engr, Norway
M. Mahootchi (H. Tiszhoosh, SYDE)	Ph.D.	Storage system management using soft computing and nonlinear models	2009	Professor, Iran
M. Kamali (R. Soulis, CIVE)	Ph.D.	Calibration of large scale hydrologic catchments	2010	PostDoc, UW
Yousef El-Rayani (ElShat-shat, ECE)	Ph.D.	Models for decision making in local distribution networks considering uncertain renewable energy sources	2012	Engineer, Guelph
Lu Chang	M.A.Sc.	Optimization Models for Applications in Portfolio Management and Advertising Industry	2012	RA, UW
P. Manilachelvan	M.A.Sc.	Optimization Method for Inventory and Supply Chain Management	2013	Manager, India
H. Junjua	M.A.Sc.	Fusion of ice thickness from passive microwave data and ice ocean model for improved estimation	2015	Engineering, Waterloo
M. Farahani	M.A.Sc.	Service revenue management in the presence of grouping complementarities	2015	Engineer, Waterloo
N. Akhundov	M.A.Sc.	Optimal Location, Patient Routing, and Capacity Decisions for an Endoscopy Clinical Network in Western Ontario: A Simulation-based Optimization Approach	2015	Ph.D. student, Waterloo
A. Narayan	Ph.D.	A Framework For Microgrid Planning Using Multidisciplinary Design Optimization	2015	Post-Doc, UW
D. Sawh	Ph.D.	State space machine learning for detecting financial fraud	2015	Researcher, Ontario Health Ministry, Toronto

Graduated 11 Ph.D. students and 32 M.A.Sc students.

Current supervision:

3 Ph.D. Students, 1 M.A.Sc Students

Books and Course Materials:

Ponnambalam K. and T. Alguindigue, 1997. *A C++ Primer for Engineers: An Object-Oriented Approach*, McGraw-Hill Publ., New York.

Nirupama, N., K. Ponnambalam, I. Nistor, and T.S. Murty, 2006. *Tsunami Travel Time Atlas for the Atlantic Ocean*, York University Press.

Ponnambalam, K., A.W. Heemink, and S.G. Fletcher, Models for Water and Environmental Systems Analysis and Design: An Interactive Webbook, University of Waterloo, Waterloo, Canada, 2010.

(see <http://epoch.uwaterloo.ca:8008/software/>)

Ponnambalam, K. Interactive Web Notes with automated self-evaluation questionnaires for the Numerical Methods course. (see

<http://epoch.uwaterloo.ca/syde312/welcome2.htm>)