

CURRICULUM VITAE

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EDUCATION

Sept. 1985–
Aug. 1989 **Dept. of Electrical Engineering and Computer Science**
Massachusetts Institute of Technology, Cambridge, Mass., USA
- Candidate for Ph.D; completed August 1989
- Minor in Computer Science;
- Thesis topic: *Communication Complexity of Some Problems in Distributed Computation*; (Supervisor: J.N. Tsitsiklis)

Sept. 1984–
May 1985 **Nankai Institute of Mathematics, Nankai University**, Tianjin, China
- One year intensive training program in Mathematics and English, sponsored by the Ministry of Education of China.

Sept. 1980–
May 1984 **Dept. of Mathematics, Peking University**, Beijing, China
- B.Sc. in Applied Mathematics, 1984; GPA 4.9/5
- Awarded several scholarships for outstanding academic performances, 1980-84.
- Selected as one of the 12 students nationally by the Government of China and by a joint SIAM-AMS (*Society of Industrial and Applied Mathematics* and *American Mathematical Society*) committee for Ph.D study in the U.S. with full scholarship, 1984.

EMPLOYMENT HISTORY

- July 2001–
present **Dept. of Electrical and Computer Engineering, McMaster University**
Canada Research Chair in Information Processing and Department Head
- July 2000–
June 2001 **Dept. of Electrical and Computer Engineering, McMaster University**
Full Professor and Department Head
- July 1998–
July 2000 **Dept. of Electrical and Computer Engineering, McMaster University**
Full Professor
- July 1992–
present **Dept. of Computing and Software, McMaster University**
Associate member
- July 1993–
June 1998 **Dept. of Electrical and Computer Engineering, McMaster University**
Tenured Associate Professor
- Sept. 1989–
June 1993 **Dept. of Electrical and Computer Engineering, McMaster University**
Tenure Track Assistant Professor
- Jan. 1986–
Aug. 1989 **Laboratory for Information and Decision Systems, MIT**
Research Assistant
Research to determine the minimum amount of information that has to be exchanged in order for a set of processors to solve a problem cooperatively.
- Sept. 1985–
Dec. 1985 **Center for Technology, Policy and Industrial Development, MIT**
Research Assistant
Risk Analysis using computer simulation.

PROFESSIONAL MEMBERSHIP

— Member of IEEE, SIAM, MPS.

SCHOLARLY AND PROFESSIONAL ACTIVITIES

1. Associate editor for
 - *Journal of Optimization Theory and Applications*
 - *SIAM Journal on Optimization*
 - *Mathematics of Computation*
 - *Mathematics of Operations Research*
 - *IEEE Transactions on Signal Processing*
 - *Optimization and Engineering*
2. Referee of numerous NSF (U.S.), NSERC (Canada), and RGC (Hong Kong) grant applications on Applied Mathematics, Signal Processing, Circuits and Systems
3. Served on CITO (*Communication and Information Technology Ontario*, a provincial research center of excellence) research program review panel and NSF proposal review panel in the area of computational sciences and information technology.
4. Referee for IEEE journals, SIAM journals, and many others
5. Organizer of 1998 international workshop on Optimization Methods and Applications, held in City University of Hong Kong.
6. Organizer and session chairperson of many international conferences on high performance computing and optimization methods.

PROFESSIONAL AND CAREER INTERESTS

My career goal is to excel in both teaching and research in a stimulating academic environment. My general research interests include the algorithmic/complexity issues arising from data communication, information theory and coding, wireless and optical networks and systems, and signal processing. My current research interest lies in the theory of multi-user communications and the application of optimization techniques to the design of multi-antenna communication systems. I am also interested in government and industrial consulting.

HONOURS AND AWARDS

1. Canada Research Chair in Information Processing, since July 2001.
2. Nominated twice for the McMaster University teaching award by the McMaster Student Union.
3. Best Paper Award in the *International Conference on Optimization Techniques and Applications*, for the paper “Optimal Transceiver Design Via Convex Optimization”, December 2001, Hong Kong.
4. International Research Fellowship from K.C. Wong Education Foundation (Hong Kong) through Chinese Academy of Science, 1996.
5. Adjunct Professor, Department of Information Science and Engineering, Nanchang University, Jiangxi, P.R. China.
6. Adjunct Professor, Department of Applied Mathematics, Shanghai University, Shanghai, P.R. China.
7. Visiting Professor (September 2000 – December 2000), Department of Applied Mathematics and Physics, School of Informatics, Kyoto University, Kyoto, Japan.

COURSES TAUGHT

- Undergraduate teaching:
 1. COE2YA4 *Data Structures and Computer Algorithms*, Fall terms 1989–1993, 1999;
 2. COE3KB3 *Computational Methods II*, Spring term 1990;
 3. COE2KA3 *Computational Methods I*, Spring term 1991–1994;
 4. EE3TI4 *Introduction to Communication Systems*, Fall term 1998;
 5. EE4AC3 *Digital Communication*, Spring term 1997, 1998.
- Graduate teaching:
 1. EE792 *Introduction to Stochastic Processes*, Fall term 1991;
 2. EE799 *Introduction to Computational Learning Theory*, Fall term 1992.
 3. EE733 *Information Theory and Coding*, Spring term 1994, Fall term 1998, 2000, 2002.
 4. EE730 *Signal Space Theory*, Fall term 1997.
 5. EE799 *Engineering Optimization*, Spring term 1998, Fall term 1999, 2001.
 6. EE724 *Space-Time Communication Theory*, Spring term 2002.

RESEARCH SUPERVISION EXPERIENCE

- Supervision of 9 postdoctoral fellows:
 - Eight completed: Dr. Shiquan Wu, Dr. Jos F. Sturm, Dr. T. Ratnarajah, Dr. Xiong Zhang, Dr. Yuan Li, Dr. Nashaud Dowlut; Dr. T. Davidson, Dr. Xiaoping Zhang (the last two co-supervised with Dr. K.M. Wong).
 - One in progress: Dr. Baldur Steingrímsson (co-supervised with Dr. K.M. Wong).
- Supervision of 12 Ph.D. students:
 - Four completed: W. Dam, K. Afkhamie, Q. Jin, J. Liu (the last two co-supervised with Dr. K.M. Wong).
 - Eight in progress: M. Saad, N. Kisialiau, D. Labhukin, D. Augeev, A. Krasnopeev, J. Lu (part-time), J. Yu (part-time), L. Li (part-time).
- Supervision of 11 M.Eng. students:
 - Eight completed: R. Cui, B. Maricic, K. Afkhamie, L. Tan, X. Li, Y. Sun, M. Meng, W. Liu, (the last four co-supervised with Dr. K.M. Wong).
 - Three in progress: Y. Liu, L. He, W. Shum.
- Ph.D supervisory committees: more than 15
- Visiting professors (3 completed): Prof. Ickho Song, Prof. Yunmin Zhu, Prof. Jie Sun.
- Supervised the overall research activities for the Signal Processing for Communications Group (consisting of 13 members) between January 1997 and July 1999.
- Supervised 24 undergraduate thesis.

RESEARCH FUNDING (last ten years)

1. Operating grant from Canada Research Chairs program, \$200,000 per annum, 2001–2008.
 - Principal investigator: Luo, Z.-Q.
2. Research grant from Ontario Innovation Trust, \$49,660 per annum, 2001-2005.
 - Principal investigator: Luo, Z.-Q.
3. Research Grant from Canada Foundation for Innovation, \$49,660 per annum, 2001-2005.

- Project title: Testing and Analysis Equipment for Information Processing Lab.
 - Principal investigator: Luo, Z.-Q.
4. Research grant from NSERC, \$42,000 per annum, 1999–2003.
 - Project title: Advanced Optimization Algorithms for Digital Communication and Signal Processing.
 - Principal investigator: Luo, Z.-Q.
 5. Research contract from CITO, \$90,000 per annum 2000-2002.
 - Project title: Data Fusion with Applications to Multi-target Tracking
 - Principal investigator: Luo, Z.-Q., Co-investigators: Bosse, E. and Wong, M.
 6. Research contract from CITO, \$75,000 per annum 2001-2003.
 - Project title: Algorithmic Issues in Practical Communication
 - Principal investigator: Luo, Z.-Q., Co-investigators: Davidson, T.N.
 7. International Cooperative Research Project sponsored by the Ministry of Education, Science, Sports and Culture of Japan, \$9,900,000 (Yen), 1999-2001.
 - Project title: Synthesis, Analysis, and Algorithms of Optimization and Equilibrium Problems
 - Principal investigator: Fukushima, M. (Kyoto University, Japan), Co-investigators: Kanzow, C. (Germany), Luo, Z.-Q. (Canada), Qi, L. (Australia), Pang, J.S., Tseng, P. (U.S.A.), Chen, X., Yamashita (Japan).
 8. Research contract from CITO, \$50,000 per annum, 1998-2000.
 - Project title: Data Fusion with Applications to Multi-target Tracking
 - Principal investigator: Luo, Z.-Q., Co-investigators: Bosse, E. and Wong, M.
 9. Research contract from Groupe Informission, \$30,000 per annum, 1998-2000.
 - Project title: Data Fusion with Applications to Multi-target Tracking
 - Principal investigator: Luo, Z.-Q., Co-investigators: Bosse, E. and Wong, M.
 10. Research contract from Nortel Networks, \$22,000, 1998-1999.
 - Project title: High Order Statistics Methods for Blind Signal Separation
 - Principal Investigator: Luo, Z.-Q.

11. Research contract from Ontario Hydro Technology, \$17,000, 1998-1999.
 - Project title: Feasibility Study of Digital Communication over Power Lines.
 - Principal investigator: Luo, Z.-Q., Co-investigators: Davidson, T., Reilly, J.P.
12. Research contract from DREV, \$120,000, 1997-1999.
 - Project title: Multi-target Tracking and Data Fusion
 - Principal investigator: Luo, Z.-Q., Co-investigator: Wong, K.M.
13. Research grant from NSERC, \$33,300 per annum, 1995–1999.
 - Project title: Mathematical Programs with Equilibrium Constraints
 - Principal investigator: Luo, Z.-Q.
14. Research contract from DREO, \$74,405, 1997-1998.
 - Project title: DSP implementation of On-line Classification Algorithms for Intra-Pulse Analysis.
 - Principal investigator: Luo, Z.-Q., Co-investigator: Wong, K.M.
15. Research contract from DREO, \$55,000, 1996-1997.
 - Project title: Intra-Pulse Analysis of Passive Emitters
 - Principal investigator: Wong, K.M., Co-investigator: Luo, Z.-Q.
16. Research contract from DREV, \$112,000, 1994-1997.
 - Project title: Pre-Processing Techniques for Multi-target Tracking and Data Association
 - Principal investigator: Wong, K.M., Co-investigators: Luo, Z.-Q. and Yip, P.
17. Equipment grant from NSERC, \$28,875, 1995–1996.
 - Project title: Workstations for Scientific Computation.
 - Principal investigator: Luo, Z.-Q.
18. Operating grant from NSERC, \$25,000 per annum, 1992–1995.
 - Project title: Convergence Analysis and Applications of Large Scale Optimization Methods.
 - Principal investigator: Luo, Z.-Q.

19. Operating grant from NSERC, \$18,843 per annum, 1990–1992

- Project title: Communication Complexity of Parallel and Distributed Computation.
- Principal investigator: Luo, Z.-Q.

PUBLICATIONS

A. Refereed Journal Publications

- **Papers published or accepted for publication**

1. Vorobyov, S., Gershman, A. and Luo, Z.-Q., “Robust Adaptive Beamforming Using Worst-Case Performance Optimization,” Accepted for publication in *IEEE Transactions on Signal Processing*.
2. Ding, Y.-W., Davidson, T.N., Luo, Z.-Q. and Wong, K.M., “Minimum BER Block Precoders for Zero-forcing Equalization,” Accepted for publication in *IEEE Transactions on Signal Processing*.
3. Maricic, B., Luo, Z.-Q. and Davidson, T.N., “Blind Constant Modulus Equalization via Convex Optimization,” Accepted for publication in *IEEE Transactions on Signal Processing*.
4. Davidson, T.N., Luo, Z.-Q. and Sturm, J., “Linear Matrix Inequality Formulation of Spectral Mask Constraints,” Accepted for publication in *IEEE Transactions on Signal Processing*.
5. Pesavento, M., Gershman, A. and Luo, Z.-Q., “Robust Array Interpolation Using Second-Order Cone Programming,” *IEEE Signal Processing Letters*, Vol. 9, pp. 8–11, 2002.
6. Ma, W.-K., Davidson, T.N., Wong, K.M., Luo, Z.-Q. and Ching, P.-C., “Quasi-maximum-likelihood multiuser detection using semi-definite relaxation,” Accepted for publication in *IEEE Transactions on Signal Processing*.
7. Zhang, J.-K., Davidson, T.N., Luo, Z.-Q. and Wong, K.M., “Design of Interpolating Biorthogonal Multiwavelet Systems with Compact Support,” *Applied and Computational Harmonic Analysis*, Vol. 11, pp. 420–438, 2001.
8. Mirjalily, G., Luo, Z.-Q., Davidson, T. and Bosse, E., “Blind Adaptive Decision Fusion for Distributed Detection”, Accepted for publication in *IEEE Transactions on Aerospace and Electronic Systems*.
9. Luo, Z.-Q., Meng, M., Wong, K.M. and Zhang, J.-K., “A Fractionally Spaced Blind equalizer Based on Linear Programming,” Accepted for publication in *IEEE Transaction on Signal Processing*.

10. Fukushima, M., Luo, Z.-Q. and Tseng, P., "Smoothing Functions for Second-Order-Cone Complementarity Problems," Accepted for publication in *SIAM Journal on Optimization*.
11. Li, L., Luo, Z.-Q., Wong, K.M. and Bossé, E., "Semidefinite Programming Solutions to the Robust State Estimation Problem", Accepted for publication in *SIAM Journal on Optimization*.
12. Afkhamie, K.H., Luo, Z.-Q. and Wong, K.M., "MMSE Decision-Feedback Equalization with Short Training Sequences: An Application of Interior Point Least Squares," Accepted for publication in *IEEE Transactions on Signal Processing*.
13. Li, L., Luo, Z.-Q., Wong, K.M. and Bossé, E. "Convex Optimization Approach to Identity Fusion For Multi-Sensor Target Tracking," *IEEE Transaction on Systems, Man and Cybernetics*, Part A: Systems and Humans, Vol. 31, No. 3, pp. 172–178, 2001.
14. Luo, Z.-Q., "New Error Bounds and Their Applications to Convergence Analysis of Iterative Algorithms," *Mathematical Programming, Series B*, Vol. 88, pp. 341–356, 2000.
15. Fu, M., Souza, C. and Luo, Z.-Q., "Finite Horizon Robust Kalman Filter Design," Accepted for publication in *IEEE Transactions on Signal Processing*.
16. Luo, Z.-Q., Sturm, J.F. and Zhang, S., "Conic Convex Programming and Self-dual Embedding," *Optimization Methods and Software*, Vol. 14, No. 3, pp. 169–218, 2000.
17. Ding, Z. and Luo, Z.-Q., "A Fast Linear Programming Algorithm for Blind Equalization," *IEEE Transactions on Communications*, September, 2000.
18. Afkhamie, K.H. and Luo, Z.-Q., "Blind Identification of FIR Systems Driven by Markov-Like Input Signals," *IEEE Transactions on Signal Processing*, Vol. 48, No. 6, pp. 1726–1736, 2000.
19. Davidson, T.N., Luo, Z.-Q. and Wong, K.M., "Spectrally-Efficient Orthogonal Pulse Shape Design via Semidefinite Programming," *IEEE Transactions on Signal Processing*, Vol. 48, No. 5, pp. 1433–1445, 2000.
20. Afkhamie, K., Luo, Z.-Q. and Wong, K.M., "Adaptive Linear Filtering Using Interior Point Optimization Techniques," *IEEE Tran. on Signal Processing*, Vol. 48, No. 6, pp. 1637–1648, 2000.
21. Zhu, Y., Blum, R., Luo, Z.-Q. and Wong, K.M., "Unexpected Properties and Optimal Distributed Sensor Detectors for Dependent Observation Cases," *IEEE Trans. on Automatic Control*, Vol. 45, No. 1, pp. 62–72, 2000.
22. Luo, Z.-Q. and Sturm, J.F., "Error Bounds for Quadratic Systems," *High Performance Optimization*, Hans Frenk, Kees Roos, Tamas Terlaky and Shuzhong Zhang (Eds.), pp. 383–404, Kluwer Academic Publishers, 2000.

23. Luo, Z.-Q. and Sun, J., “Polynomial Cutting Surfaces Algorithm for the Convex Feasibility Problem Defined by Self-Concordant Inequalities”, *Computational Optimization and Applications*, Vol. 15, pp. 167–191, 2000.
24. Wong, K.M., Luo, Z.-Q., Liu, J., Lee, J. and Gao, S., “Radar Emitter Classification Using Intra-Pulse Data,” *International Journal on Electronics and Communications*, Vol. 53, No. 6, pp. 324–332, 1999.
25. Luo, Z.-Q. Roos, C. and Terlaky, T., “Complexity Analysis of a Logarithmic Barrier Decomposition Method for Semi-infinite Linear Programming”, *Applied Numerical Mathematics*, Vol. 29, pp. 379–394, 1999.
26. Zhang, J., Wong, K.M., Luo, Z.-Q. and Ching, P.C., “Blind Adaptive FRESH Filtering for Signal Extraction,” *IEEE Transactions on Signal Processing*, Vol. 47, No. 5, pp. 1397–1402, 1999.
27. Li, X.-L., Luo, Z.-Q., Wong, K.M. and Bosse, E., “An Interior Point Linear Programming Approach to Two-Scan Data Association,” *IEEE Transactions on Aerospace and Electronic Systems*, Vol. 35, No. 2, pp. 474–490, 1999.
28. Luo, Z.-Q. and Sun, J., “An Analytic Center Based Column Generation Algorithm for Convex Quadratic Feasibility Problems”, *SIAM Journal on Optimization*, Vol. 9, No. 1, pp. 217-235, 1999.
29. Luo, Z.-Q. and Zhang, S., “On Extensions of Frank-Wolfe Theorems,” *Computational Optimization and Applications*, Vol. 13, pp. 87–110, 1999.
30. Fukushima, M., Luo, Z.-Q. and Pang, J.-S., “A Globally Convergent Sequential Quadratic Programming Algorithm for Mathematical Programs with Linear Complementarity Constraints”, *Computational Optimization and Applications*, Vol. 10, No. 1, pp. 5–34, 1998.
31. Fu, M., Luo, Z.-Q. and Ye, Y., “Approximation Algorithms for Quadratic Programming”, *Journal of Combinatorial Optimization*, Vol. 2, pp. 29–50, 1998.
32. Wong, K.M., Luo, Z.-Q., Jin, Q. and Bossé, E., “Data Compression, Data Fusion and Kalman Filtering in Wavelet Packet Sub-bands of a Multi-sensor Tracking System,” *IEE Proceedings on Radar, Sonar and Navigation*, Vol. 145, pp.100-108, 1998.
33. Luo, Z.-Q., Sturm, J. and Zhang, S., “Superlinear Convergence of a Symmetric Primal-Dual Path Following Algorithm for Semidefinite Programming”, *SIAM Journal on Optimization*, Vol. 8, No. 1, pp. 59–81, 1998.
34. Fu, M. and Luo, Z.-Q., “Computational Complexity of a Problem Arising in Fixed Order Output Feedback Design”, *Systems Control Letters*, Vol. 30, pp. 209–215, 1997.

35. Luo, Z.-Q., Pang, J.-S. and Ralph, D., "A Piecewise Sequential Quadratic Programming for Mathematical Programs with Nonlinear Complementarity Constraints", *Multi-level Optimization: Algorithms and Applications*, edited by Pardalos, P., Kluwer Academic Press, pp. 209–228, 1998.
36. Luo, Z.-Q. and Tseng, P., "A New Class of Merit Functions for Nonlinear Complementarity Problems", *SIAM Proceedings on Complementarity Problems*, pp. 204–225, 1997.
37. Luo, Z.-Q., Wu, S. Q. and Ye, Y., "Predictor-Corrector Method for Nonlinear Complementarity Problem," *Acta Mathematicae Applicatae Sinica*, Vol. 13, pp. 324–340, July, 1997.
38. Luo, Z.-Q., "Analysis of a Cutting Plane Method That Uses Weighted Analytic Center and Multiple Cuts," *SIAM Journal of Optimization*, Vol. 7, pp. 697–716, 1997.
39. Jin, Q., Luo, Z.-Q., and Wong, K.M., "Optimum Filter Banks for Signal Decomposition and Its Application in Adaptive Echo Cancellation," *IEEE Trans. On Signal Processing*, vol. 44, no. 7, pp. 1669-1680, July, 1996.
40. Luo, Z.-Q., Pang, J.-S., Ralph, D. and Wu, S.-Q., "Exact Penalization and Stationarity Conditions of Mathematical Programs with Equilibrium Constraints," *Mathematical Programming*, vol. 75, pp. 19–76, 1996.
41. Tseng, P. and Luo, Z.-Q., "On Computing the Nested Sums and Infimal Convolutions of Convex Piecewise–Linear Functions," *Journal of Algorithms*, vol. 21, pp. 240–266, 1996.
42. Goffin, J.-L., Luo, Z.-Q. and Ye, Y., "Complexity Analysis of an Interior Cutting Plane Method for Convex Feasibility Problems", *SIAM Journal on Optimization* vol. 6, No. 3, pp. 638–652, 1996.
43. Jin, Q., Wong, K. M. and Luo, Z. Q., "The Estimation of Time Delay and Doppler Stretch of Wideband Signals," *IEEE Transactions on Signal Processing*, Vol. 43, pp. 904–916, 1995.
44. Luo, Z.-Q., "Convergence Analysis of Primal-Dual Interior Point Algorithms for Convex Quadratic Programs," *Recent Trends in Optimization Theory and Applications*, R.P. Argawal, Editor, pp. 255–270, 1995 World Scientific Publishing Company.
45. Luo, Z.-Q. and Tseng, P., "Perturbation Analysis of a Condition Number for Linear Systems," *SIAM Journal on Matrix Analysis and Applications*, Vol. 15, pp. 636–660, 1994.

46. Luo, Z.-Q. and Tseng, P., "Analysis of an Approximate Gradient Projection Method with Applications to the Back Propagation Algorithm," *Optimization Methods and Software*, Vol. 4, pp. 85–101, 1994.
47. Goffin, J.-L., Luo, Z.-Q. and Ye, Y., "On the Complexity of a Column Generation Algorithm for Convex or Quasiconvex Feasibility Problems," *Large Scale Optimization: State of the Art*, W.W. Hager, D.W. Hearn and P.M. Pardalos, Editors, 1994 Kluwer Academic Publishers B.V., pp. 182–191.
48. Luo, Z.-Q. and Tseng, P., "On the Rate of Convergence of a Distributed Asynchronous Routing Algorithm," *IEEE Transactions on Automatic Control*, Vol. 39, pp. 1123–1129, 1994.
49. Luo, Z.-Q., "One-Way Communication Complexity of Computing a Collection of Rational Functions," *Journal of Complexity*, Vol. 10, pp. 179–198, 1994.
50. Jin, Q., Luo, Z.-Q. and Wong, K.M., "An Optimum Complete Orthonormal Basis for Signal Analysis and Design," *IEEE Transactions on Information Theory*, Vol. 40, pp. 732–742, May, 1994.
51. Luo, X.-D. and Luo, Z.-Q., "Extension of Hoffman's Error Bound to Polynomial Systems," *SIAM Journal on Optimization*, Vol. 4, pp. 383–392, May, 1994.
52. Luo, Z. Q. and Parnas, D. L., "On the Computational Complexity of a Maximum Trade Problem," *Acta Mathematicae Applicatae Sinica*, Vol. 10, No. 4, pp. 434–440, 1994.
53. Luo, Z.-Q., Mangasarian, O. L., Ren, J. and Solodov, M., "New Error Bounds for the Linear Complementarity Problem," *Mathematics of Operations Research*, Vol. 19, pp. 880–893, 1994.
54. Luo, Z.-Q. and Tsitsiklis, J.N., "Data Fusion with Minimal Communication," *IEEE Transactions on Information Theory*, Vol. 40, pp. 1551–1563, 1994.
55. Luo, Z.-Q. and Pang, J.-S., "Error Bounds for Analytic Systems and Their Applications," *Mathematical Programming*, Vol. 67, pp. 1–28, 1994.
56. Luo, Z.-Q. and Wu, S. Q., "A Modified Predictor-Corrector Method for Linear Programming," *Computational Optimization and Applications*, Vol. 3, pp. 83–91, 1994.
57. Luo, Z.-Q. and Ye, Y., "A Genuine Quadratically Convergent Polynomial Interior Point Algorithm for Linear Programming," *Advances in Optimization and Approximation*, Du, D.-Z. and Sun, J. eds, 1994 Kluwer Academic Publishers B.V., pp. 235–246.
58. Luo, Z.-Q. and Tsitsiklis, J., "On the Communication Complexity of Distributed Algebraic Computation," *Journal of Association of Computing Machinery*, Vol. 40, pp. 1019–1047, November, 1993.

59. Luo, Z.-Q. and Tseng, P. "Error Bound and Reduced-Gradient Projection Algorithms for Convex Minimization Over a Polyhedral Set," *SIAM Journal on Optimization*, Vol. 3, pp. 43-59, February 1993.
60. Wong, K.M., Luo, Z.-Q. and Jin, Q., "Design of Optimum Signals for the Simultaneous Estimation of Time Delay and Doppler Shift," *IEEE Transactions on Signal Processing*, Vol. 41, pp. 2141-2154, June, 1993.
61. Luo, Z.-Q. and Tseng, P., "On the Convergence Rate of Dual Ascent Methods for Strictly Convex Minimization," *Mathematics of Operations Research*, Vol. 18, pp. 846-867, November, 1993.
62. Luo, Z.-Q. and Tseng, P., "Error Bounds and Convergence Analysis of Feasible Descent Methods: A General Approach," *Annals of Operations Research*, Vol. 46, pp. 157-178, 1993.
63. Luo, Z.-Q. and Tseng, P., "On the Linear Convergence of Descent Methods for Convex Essentially Smooth Minimization," *SIAM Journal on Control & Optimization*, Vol. 30, No. 2, pp. 408-425, 1992.
64. Luo, Z.-Q. and Tseng, P., "Error Bound and Convergence Analysis of Matrix Splitting Algorithms for the Affine Variational Inequality Problem," *SIAM Journal on Optimization*, Vol. 2, No. 1, pp. 43-54, 1992.
65. Luo, Z.-Q. and Tseng, P., "On the Convergence of the Coordinate Descent Method for Convex Differentiable Minimization," *Journal of Optimization Theory and Applications*, Vol. 72, No. 1, pp. 7-35, 1992.
66. Tseng, P. and Luo, Z.-Q., "On the Convergence of the Affine-Scaling Algorithm," *Mathematical Programming*, Vol. 56, pp. 301-319, 1992.
67. Luo, Z.-Q. and Tseng, P., "On a Global Error Bound for a Class of Monotone Affine Variational Inequality Problems," *Operations Research Letter*, Vol. 11, pp. 159-165, 1992.
68. Luo, Z.-Q. and Tseng, P., "On the Convergence of a Matrix Splitting Algorithm for the Symmetric Linear Complementarity Problem," *SIAM Journal on Control & Optimization*, Vol. 29, No. 5, pp. 1037-1060, 1991.
69. Luo, Z.-Q. and Tsitsiklis, J., "On the Communication Complexity of Solving a Polynomial Equation," *SIAM Journal on Computing*, Vol. 20, pp. 936-950, 1991.
70. Luo, Z.-Q., "On the Convergence of the LMS Algorithm with Adaptive Learning Rate for Linear Feedforward Networks," *Neural Computation*, Vol. 3, No. 2, pp. 226-245, 1991.
71. Luo, Z.-Q. and Tseng, P., "A Decomposition Property for a Class of Square Matrices," *Applied Mathematics Letters*, Vol. 4, pp. 67-69, 1991.

72. Luo, Z.-Q., “Communication Complexity of Computing a Collection of Rational Functions,” *Advances in Computing and Information*, edited by S. Akl, F. Fiala and W. Koczkodaj, Lecture Notes of Computer Science, Springer–Verlag, pp. 453–462, 1990.
73. Tsitsiklis, J.N. and Luo, Z.-Q., “Communication Complexity of Convex Optimization,” *Journal of Complexity*, Vol. 3, pp. 231–243, 1987.

• **Submitted for Publication**

1. Lu, J. and Luo, Z.-Q., “Blind Separation of BPSK Signals Using Newton’s Method on the Stiefel Manifold,” Submitted to *IEEE Signal Processing Letters*.
2. Liu, J., Gershman, A. and Luo, Z.-Q., “Adaptive Beamforming with Sidelobe Control: A Second Order Cone Programming Approach,” Submitted to *IEEE Signal Processing Letters*.
3. Saad, M. and Luo, Z.-Q., “A Lagrangean Decomposition Approach for the Routing and Wavelength Assignment in Multifiber WDM Networks,” Submitted to *IEEE/ACM Transactions on Networking*.
4. Shahbazpanahi, S., Gershman, A., Luo, Z.-Q. and Wong, K.M., “Robust Adaptive Beamforming For General-Rank Signal Models,” Submitted to *IEEE Transactions on Signal Processing*.
5. Luo, Z.-Q., Davidson, T.N., Giannakis, G.B. and Wong, K.M., “Transceiver Optimization for Multiple Access through ISI Channels”, Submitted to *IEEE Transactions on Signal Processing*.
6. Cui, S., Luo, Z.-Q. and Ding, Z., “Robust Blind Multiuser Detection against Signature Waveform Mismatch,” Submitted to *IEEE Transactions on Information Theory*.
7. Fukushima, M., Luo, Z.-Q. and Tseng, P., “A Sequential Quadratically Constrained Quadratic Programming Method for Differentiable Convex Minimization,” Submitted to *SIAM Journal on Optimization*.
8. Luo, Z.-Q. and Lu, J., “Blind Separation for Instantaneously Mixed Signals,” Submitted for publication.

B. Refereed Conference Papers

1. Saad, M. and Luo, Z.-Q., “On the Routing and Wavelength Assignment in Multifiber WDM Networks,” *To appear in Proceedings of 2002 Globecom*.
2. Li, Y. and Luo, Z.-Q., “Parallel Detection for V-BLAST System,” *Proceedings of 2002 IEEE International Conference on Communication*, Vol. 1, pp. 340–344.

3. Ohno, S., Anghel, P., Giannakis, G. and Luo, Z.-Q., "Multi-Carrier Multiple Access is Sum-Rate Optimal for Block Transmissions over Circulant ISI Channels," *Proceedings of 2002 IEEE International Conference on Communication*, Vol. 3, pp. 1656–1660.
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15. Afkhamie, K.H. and Luo, Z.-Q., "Adaptive Parameter Estimation Using Interior Point Optimization Techniques: Convergence Analysis," *Proceedings of 1999 IEEE International Conference on Acoustics, Speech, and Signal Processing*, Vol. 3, pp. 1681-1684, 1999.
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22. Dam, W.C., Taylor, D.P. and Luo, Z.-Q., "Computational Cutoff Rate Of BDPSK Signaling Over Correlated Rayleigh Fading Channels," *Proceedings of 1995 IEEE International Symposium on Information Theory*, pp. 152.
23. Luo, Z.-Q. and Tseng, P., "A New Class of Merit Functions for the Nonlinear Complementarity Problem," *1995 International Conference on Complementarity Problems*, Baltimore, Maryland, November, 1995.

24. Afkhamie, K. and Luo, Z.-Q., "Blind Deconvolution Using Second Order Statistics," *Proceedings of ICASSP'95*, Detroit, May 1995.
25. Jin, Q., Wong, K. M. and Luo, Z. Q., "Wideband Time Delay and Doppler Stretch Estimation: the Application of Wavelet Transform and the Optimum Signal," presented at *ICASSP93'*, Minneapolis, Minnesota, June, 1993.
26. Luo, Z.-Q. and Tseng, P., "Analysis of the Back Propagation Algorithm for Neural Networks with Arbitrary Error Functions," presented at the Symposium of Parallel Optimization 3, Madison, University of Wisconsin, July, 1993.
27. Luo, Z.-Q. and Tseng, P., "Analysis of the Back Propagation Algorithm for Neural Networks with Arbitrary Error Functions," presented at the Symposium of Parallel Optimization 3, Madison, University of Wisconsin, July, 1993.
28. Jin, Q., Wong, K. M. and Luo, Z. Q., "Wideband Time Delay and Doppler Stretch Estimation: the Application of Wavelet Transform and the Optimum Signal," *Proceedings of ICASSP93'*, Minneapolis, Minnesota, June, 1993.
29. Luo, Z.-Q. and Tseng, P., "Error Bounds and Convergence Analysis of Feasible Descent Methods for Solving Symmetric Variational Inequality Problems," presented at the ORSA/TIMS conference, San Francisco, October, 1992.
30. Luo, Z.-Q. and Tseng, P., "Error Bounds and Convergence Analysis of Feasible Descent Methods for Solving Symmetric Variational Inequality Problems," presented at the ORSA/TIMS conference, San Francisco, October, 1992.
31. Luo, Z.-Q. and Tseng, P., "Convergence Studies of Matrix Splitting Algorithms for the Linear Complementarity Problems," presented at the ORSA/TIMS conference, Nashville, Tennessee, May, 1991.
32. Luo, Z.-Q. and Tseng, P., "On the Hoffman's Error Bound for a Polyhedral Set," presented at the 14th International Symposium on Mathematical Programming, Amsterdam, The Netherlands, August, 1991.
33. Luo, Z.-Q. and Tsitsiklis, J., "On the Communication Complexity of Solving a Polynomial Equation," presented at *1990 International Symposium on Information Theory*, San Diego, California, January, 1990.
34. Luo, Z.-Q. and Tseng, P., "Convergence Studies of Coordinate Descent Algorithms for Convex Minimization Problems," presented at the ORSA/TIMS conference, Philadelphia, October, 1990.

35. Luo, Z.-Q. and Tsitsiklis, J., “Communication Complexity of Algebraic Computation,” *1990 IEEE Symposium on Foundations of Computer Science*, pp. 758–765, October, 1990.
36. Luo, Z.-Q., “Communication Complexity of Computing a Collection of Rational Functions,” presented on *International Conference on Computing and Information*, pp. 408–412, 1990, Niagara Falls, Ontario, Canada.
37. Jin, Q., Luo, Z.-Q. and Wong, K.M., “Optimum Signal Design in Time-Frequency Plane,” *Proceedings of the International Symposium on Digital Signal Processing*, Beijing, P.R. China, October, 1990.
38. Luo, Z.-Q. and Tsitsiklis, J., “Communication Complexity of Algebraic Computation,” *1990 IEEE Symposium on Foundations of Computer Science*, pp. 758–765, October, 1990.
39. Luo, Z.-Q. and Tsitsiklis, J., “Communication Complexity in Distributed Algebraic Computation,” *Proceedings of the 28th IEEE Conference on Decision and Control*, pp. 899–900, Tampa, Florida, December, 1989.

C. Books

1. Luo, Z.-Q, Pang, J.-S. and Ralph, D., *Mathematical Programs with Equilibrium Constraints*, Cambridge University Press, 400 pages, 1996.
2. Luo, Z.-Q. and Pang, J.-S. (Guest Editors), *Error Bounds and Their Applications in Mathematical Programming*, **Mathematical Programming**, Series B, 2000.

INVITED PRESENTATIONS

1. Semi-plenary speaker, International Symposium on Mathematical Programming, Copenhagen, Denmark, August, 2003.
2. Tutorial, IEEE International Conference on Acoustics Speech and Signal Processing, Orlando, Florida, 2002.
3. Georgia Institute of Technology, Department of Industrial and Systems Engineering, and School of Electrical and Computer Engineering, April, 2002.
4. Johns Hopkins University, Department of Mathematical Sciences, February, 2002.
5. The First International Conference on Optimization Methods and Software, Hangzhou, China, 2002.

6. ICMP2002, Shanghai, China, 2002.
7. University of Florida, Department of Electrical and Computer Engineering, May 2001.
8. International Conference on Numerical Analysis and Optimization, Matseyama, Japan, October, 2001.
9. International Conference on Numerical Optimization and Numerical Linear Algebra, Dunhuang, May, 2001.
10. The joint AMS-HKMS conference, Hong Kong, December, 2000.
11. Department of Mathematics and Computer Sciences, Shimane University, Japan, November, 2000.
12. The first Sino-Japan Joint Optimization Conference, Hong Kong, October, 2000.
13. Institute of Statistical Mathematics and Physics, Tokyo, Japan, October, 2000.
14. Operations Research Center, MIT, April, 2000.
15. Defense Research Establishment Ottawa (DREO), Spring, 2000.
16. The University of Iowa, Department of Electrical Engineering, December, 1999.
17. Invited speaker for the 1999 DIMACS International Workshop on Semidefinite Programming and Applications, Princeton University, January 7-10, U.S.A.
18. Invited speaker for the International Conference on Nonlinear Programming and Variational Inequalities, December 15 - 18, 1998, Hong Kong.
19. Department of Electrical and Computer Engineering, University of Waterloo, September 15, 1998.
20. Plenary speaker in the International Workshop on High Performance Engineering Computing, Rotterdam, August, 1997.
21. International Symposium on Mathematical Programming, Laussane, Switzerland, August, 1997.
22. Department of Mathematics and Operations Research, Delft University of Technology, Delft, Holland, September, 1996.
23. Econometric Institute, Erasmus University, Rotterdam, the Netherlands, December, 1995.

24. International Workshop on Bilevel Programming, Linkoping, Sweden, November, 1995.
25. 1995 International Conference on Complementarity Problems, Baltimore, Maryland, October, 1995.
26. Nara Institute of Science and Technology, Nara, Japan, August, 1994.
27. University of Waterloo, Department of Combinatorics and Optimization, December 1993.
28. Cornell University, Department of Industrial Engineering and Operations Research, November 1993.
29. MIT, Operations Research Center, November, 1993.
30. Symposium on Parallel Optimization 3, Center for Parallel Optimization, Computer Sciences Department, University of Wisconsin, Madison, July, 1993.
31. McMaster University, The Michael DeGroote School of Business, March, 1993.
32. The Johns Hopkins University, Department of Mathematical Sciences, November, 1992.
33. MIT, Laboratory for Information and Decision Systems, October, 1991.
34. University of Wisconsin, Madison, Department of Computer Science, April, 1991.
35. The National University of Singapore, Department of Decision Sciences, June 1995.
36. Many invited presentations in the Chinese Academy of Sciences and various Chinese universities.

ADMINISTRATIVE RESPONSIBILITIES

- Department: served as a member in the graduate affairs committee, the computer engineering committee, the Promotion, Tenure and Awards committee (elected), and as the undergraduate advisor.
- Faculty: served as a member in the library committee, the software engineering curriculum committee, the software engineering appointment committee.