Personal Data

Name: Ruey-Lin Sheu

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Education/Experience/Current Position:

2008 – present: Chairperson and Director
Department of Mathematics and Institute of Applied Mathematics,
National Cheng-Kung University, Tainan, Taiwan

2004 (September – November): Visiting Professor
Operations Research, North Carolina State University, Raleigh, North Carolina, USA

2000 (June – December): Visiting Professor
Department of Mathematics, Temple University, Philadelphia, Pennsylvania, USA

1999 – present: Professor of Mathematics,
National Cheng-Kung University, Tainan, Taiwan

1993 – 1999: Associate Professor
Department of Mathematics,
National Cheng-Kung University, Tainan, Taiwan

1992 – 1993: Member of Technical Staff
Advanced Decision Support System,
AT&T Bell Laboratories,
Holmdel, New Jersey, USA.

1991 – 1992: North Carolina State University, Raleigh, North Carolina, USA
Ph.D. in Operations Research

1989 – 1991: North Carolina State University, Raleigh, North Carolina, USA
M.S. in Operations Research

1983 – 1987: National Tsing-Hua University, Hsing-Chu, Taiwan
B.S. in Mathematics

Research Interest:

- Nonconvex quadratic programming
- Fractional Programming
- Dualities
- Global Optimization
- Linear and Nonlinear Optimization
- Logistics and Transportation
- Telecommunication Network Planning

- Large Scale Optimization
- Stochastic Optimization

Teaching:

- Introduction to Applied Mathematics
- Operations Research
- Linear Programming
- Nonlinear Programming
- Stochastic Processes
- Real Analysis
- Convex Analysis
- Functional Analysis
- Optimization in Vector Spaces
- Advanced Calculus/Calculus

Journal Articles:

1. Y. Xia, R. L. Sheu, X. Sun and D. Li, 2010, "On Semidefinite Programming Relaxation for Standard Quadratic Program," submitted.
2. Y. Xia, R. L. Sheu, X. Sun and D. Li, 2010, "Optimal Weighted Reduction of Duality Gap in Binary Quadratic Optimization," submitted.
3. H. J. Chen, S. Schaible, and R. L. Sheu, 2010, "Convergence Rate Analysis on the Generic Algorithm for Generalized Fractional Programming," submitted.
4. W. Xing, S. C. Fang, R. L. Sheu, and Z. Wang, 2010, "A Canonical Dual Approach to Solving Linearly Constrained Quadratic Programs," submitted.
5. W. Xing, S. C. Fang, D. Y. Gao, R. L. Sheu, and L Zhang, 2010, "Canonical Dual Solution to the Quadratic Programming over a Quadratic Constraint", submitted.
6. J. M. Fen, G. X. Lin, R. L. Sheu, and Y. Xia, 2010, "Duality and Solutions for Quadratic Programming over One Non-Homogeneous Quadratic Constraint," to appear in Journal of Global Optimization.
7. J. Y. Lin and R. L. Sheu, 2010, "Minimization of an isotonic function composed of fractions", Journal of Optimization Theory and Applications, Vol. 146, No. 3, 581 – 601.
8. S. C. Fang, D. Y. Gao, R. L. Sheu, and W. Xing, 2009, "Global Optimization for A Class of Fractional Programming Problems", Journal of Global Optimization, Vol. 45, No. 3, 337 – 353.
9. H. J. Chen, S. Schaible, and R. L. Sheu, 2009, "Generic Algorithm for Generalized Fractional Programming," Journal of Optimization Theory and Applications, Vol. 141, No. 1, 93 - 105.
10. R. L. Sheu, W. I. Wu and Ilker Birbil, 2008 "Solving the Sum-of-Ratios Problem by Stochastic Search Algorithm," Journal of Global Optimization, Vol. 42, No. 1, 91-109.
11. S. C. Fang, D. Y. Gao, R. L. Sheu, and S. Y. Wu, 2008, "Canonical dual approach for solving quadratic integer programming problems", Journal of Industrial and Management Optimization, Vol. 4, No. 1,

125-142.

12. J. Y. Lin, P. Manyem, and R. L. Sheu, 2007, “Performance Estimations of First Fit Algorithm for Online Bin Packing with Variable Bin Sizes and LIB constraints”, Pacific Journal of Optimization, Vol. 3, No.3, 511-527.
13. R. L. Sheu, M. J. Ting, and I. L. Wang, 2006, “Maximum flow problem in the distribution network”, Journal of Industrial and Management Optimization, Vol. 2, No 3, 237-254.
14. J. Y. Lin and R. L. Sheu, 2005, “Modified Dinkelbach-type algorithm for generalized fractional programming with infinitely many ratios”, Journal of Optimization Theory and Applications, Vol. 126, no. 2, 323-343
15. Ilker Birbil, S. C. Fang and R.L. Sheu, 2004, “On the convergence of a population-based global optimization algorithm”, Journal of Global Optimization, Vol. 30, No. 3, 301 – 318.
16. R. L. Sheu and J. Y. Lin, 2004, “Solving continuous min-max problems by an iteratively entropic regularization method”, Journal of Optimization Theory and Applications, Vol. 121, No.3, 597-612.
17. G. M. Jan, R.L. Sheu, and S. Y. Wu, 2003, “Maximal feasibility problem for continuous linear inequalities”, Fuzzy Optimization and Decision Making, Vol. 2, No. 4. 297-316.
18. R.L. Sheu, 1999, “A generalized interior-point barrier function approach for smooth convex programming with linear constraints”, Journal of Information and Optimization Sciences, Vol. 20, No. 2, 187-202.
19. R.L. Sheu and S.Y. Wu, 1999, “Combined entropic-regularization and path-following method for solving finite convex minmax problems subject to infinitely many linear constraints”, Journal of Optimization Theory and Applications, Vol. 101, 167-190.
20. J.C. Liu, C.S. Wu, and R.L. Sheu, 1997, “Duality for fractional minimax programming”, Optimization 41, 117-133.
21. J.C. Liu, C.C. Lin and R.L. Sheu, 1997, “Optimality and duality for complex nondifferentiable fractional programming”, Journal of Mathematical Analysis and Applications, Vol. 210, No. 2, 804-824.
22. Sheu, R.L., Wu, S.Y., and Fang, S.C., 1995, “A primal-dual infeasible-interior-point algorithm for linear semi-infinite programming,” Computers and Mathematics with Applications, 29, No.8, 7-18.
23. Sheu, R.L. and Fang, S.C., 1994, “On the generalized path-following methods for linear programming,” Optimization 30, 235-249.
24. Sheu, R.L. and Fang, S.C., 1993, “On the relationship of interior-point methods,” Internat. J. Math. & Math. Sci. Vol. 16 No. 3, 565-572.
25. Sheu, R.L. and Fang, S.C., 1992, “Insights into the interior point methods,” ZOR 36, 227-257.

Academic Services:

- Editorial Board:

2006 – present: Associate Editor, Journal of Global Optimization

- Co-Editor:

2011 – Special Issue (to be published in Journal of Global Optimization) of the 10th International Symposium

on Generalized Convexity and Monotonicity (GCM 10), August 22 – 27, 2011, Cluj-Napoca, Romania.

- Refeeree/Book Reviewer:

1. Applied Mathematics and Computation
2. Journal of Global Optimization
3. Journal of Industrial and Management Optimization
4. Journal of Optimization Theory and Applications
5. Mathematics of Operations Research
6. Taiwanese Journal of Mathematics
7. International Journal of Operations and Quantitative Management
8. Mathematical Reviews
9. The McGraw-Hill companies (Book Reviewer)

- Conference Organizing:

1. The 4th Sino Japanese Optimization Meeting (SJOM 2008), August 27 – 31, 2008, National Cheng-Kung University, Tainan, Taiwan
2. International Conference of Optimization and Optimal Control (ICOOC 2001), June 1 – 4, 2001, National Cheng-Kung University, Tainan, Taiwan

Recent Talks in International Academic Institutes:

1. Department of Mathematical and Computing Sciences, Tokyo Institute of Technology, Japan, October 2011.
2. Research Institute for Mathematical Sciences (RIMS), Kyoto University, Japan, August 2010.
3. College of Mathematical and Computing Sciences, Hunan Normal University, China, June 2009.
4. GCM9 Summer School, National Sun Yet-Sen University, Taiwan, July 2008.
5. Graduate School of Science and Technology, Niigata University, Japan, December 2007.
6. Centre for Informatics and Applied Optimization, University of Ballarat, Australia, August 2007.
7. College of Engineering and Natural Sciences, Sabanci University, Istanbul, Turkey, April 2007.
8. Department of Mathematical Sciences, Tsinghua University, China, December 2006.
9. Department of Mathematical Sciences, Tsinghua University, China, June 2006
10. Department of Industrial Engineering, North Carolina State University, USA, November 2004.

Research Grants:

1. *Canonical duality for solving some classes of non-convex quadratic programming problems*
   National Science Council of Taiwan, 2009 -2011 (NTD 1,466,000)
2. *Canonical duality on local optimizers of quadratic functions with one quadratic constraint*
   National Science Council of Taiwan, 2008 -2009 (NTD 503,000)
3. *Theoretical and computational study on canonical duality for non-convex fractional program*

National Science Council of Taiwan, 2007 -2008 (NTD 613,000)

4. *Primal-dual algorithm for solving min-max fractional programming*
   National Science Council of Taiwan, 2005 -2007 (NTD 978,000)
5. *Optimizing sum-of-ratios by stochastic search algorithm*
   National Science Council of Taiwan, 2004 -2005 (NTD 744,500)
6. *Minimization of an isotonic function composed of fractions*
   National Science Council of Taiwan, 2003 -2004 (NTD 452,600)
7. *Entropic regularization and generalized fractional programs of infinitely many ratios*
   National Science Council of Taiwan, 2002 -2003 (NTD 597,300)
8. *Computational efficiency of a new entropic-based interior point algorithm for minimax problems*
   National Science Council of Taiwan, 2000 -2002 (NTD 546,100)
9. *Optimization and statistical mechanics*
   National Science Council of Taiwan, 2000 (NTD 513,500)
10. *Algorithms for min-max problems involving infinitely many convex functions*
    National Science Council of Taiwan, 1999 -2000 (NTD 385,800)
11. *Extensions and applications for certain convex min-max problems*
    National Science Council of Taiwan, 1998 -1999 (NTD 337,000)
12. *Using a combined row and column generation method for solving large scale linear program with applications*, National Science Council of Taiwan, 1997 -1998 (NTD 243,800)
13. *Interior point methods for nonlinear convex programming*
    National Science Council of Taiwan, 1996 -1997 (NTD 241,000)
14. *Semi-infinite linear programming with large scale matrix computation*
    National Science Council of Taiwan, 1995 -1996 (NTD 326,500)
15. *Revised column generation for solving simulated crew scheduling problem*
    National Science Council of Taiwan, 1993 -1995 (NTD 200,000)

Consulting:

- Yang-Ming Marine Transport Corp.
- Institute For Information Industry
- Retail Support International
- President Logistics International Corp.

Theses Supervised:

1. Huai-Ju Chen, (June 2010), Ph.D., “Convergence analysis on generic algorithm for solving generalized fractional programming”.
2. Joe-Mei Feng, (June 2010), M.S., “Solutions to nonconvex quadratic programming over one non-homogeneous quadratic constraint”.
3. E-Jen Lee, (June 2010), M.S., “Optimal congestion control of an Ad-Hoc network”.

4. S. H. Chu, (June 2009), M.S., “Optimal resources allocation for a connitive network”.
5. Y. J. Chen, (June 2009), M.S., “Global optimality conditions for non-convex minimization problems based on L-subgradients and Lagrange duality theory”.
6. Susan Lin, (June 2008), M.S., “Computational complexity for various types of stochastic algorithms for global optimization”.
7. Jen-Yen Lin, (January 2006), Ph.D., “Continuous min-max problems and fractional programs – an entropic approach and extensions”. The dissertation includes two papers published in Journal of Optimization Theory and applications.
8. Wen-Shiang Wu, (June 2006), M.S., “On convexity of generalized mean function and (h,\theta) convex function”.
9. Wei-Yi Lin, (June 2006), M.S., “Analysis and comparison of various algorithms on bin packing problem with variable bin size and LIB constraint”.
10. Huai-Ju Chen, (June 2005), M.S., “An integrated view of algorithms for the generalized fractional program”. The thesis won the first prize in 2005 master thesis competition held by Taiwanese Operations Research Society and is in preparation for submission to international journals.
11. Wei-Ying Wu, (June 2005), M.S., “Solving the sum-of-ratios problem by stochastic search algorithm”. The thesis is submitted to Journal of Global Optimizaiton.
12. Mu-Jong Ting, (June 2004), M.S., “Maximum flow problem in the distribution network flow model.” The thesis is accepted by Journal of Industrial and Management Optimization.
13. Cheng-Lin Lee, (July 2003), M.S., “The revisit of primal simplex method and dual simplex method.”
14. Jao-Hwan Wu, (June 2002), M.S., “On the use of the accumulative weighs to reduce the required spare resource ratio of ATM network.”
15. Jen-Yen Lin, (June 2001), M.S., “The numerical calculation of using entropic regularization and interior point method to solve continuous min-max problem.”
16. Shih-Cheng Lin, (June 2000), M.S., “Tree based fragment restoration strategy for backup paths in ATM network.”
17. Yu-Lin Hwang, (June 1999), M.S., “Duality of some real and complex fractional program.”
18. Li-Fong Su, (June 1998), M.S., “Inexact column generation for large scale linear programming.”
19. Shu-Hai Liou, (June 1998), M.S., “On computation and implementation of the airline crew scheduling problem.”
20. Xiao-Ling Lee, (June 1997), M.S., “The relation of primal and dual simplex method and application on generalized linear multiplicative programming.”
21. Ying-Fen Ho, (June 1995), M.S., “Simulation of airline crew scheduling problem.”