

CURRICULUM VITAE — Jong-Shi Pang

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CONTACT INFORMATION

Postal Address: The Daniel J. Epstein Department of Industrial and Systems Engineering, University of Southern California, 3715 McClintock Avenue, GER 240, Los Angeles, California 90089-0193, U.S.A.

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EDUCATION

Ph.D. in Operations Research, Stanford University 1976

M.S. in Statistics, Stanford University 1975

B.S. in Mathematics, National Taiwan University 1973

Associate of the Society of Actuaries 1981

PRESENT and PREVIOUS POSITIONS

- **Distinguished Professor** of Industrial and Systems Engineering, University of Southern California, April 2023–present
- **Epstein Family Chair**, Department of Industrial and Systems Engineering, University of Southern California, August 2013–present
- **Inaugural Head and Caterpillar Professor**, Department of Industrial and Enterprise Systems Engineering, University of Illinois at Urbana-Champaign, August 2007–August 2013
- **The Margaret A. Darrin Distinguished Professor** in Applied Mathematics, and Professor of Decision Sciences and Engineering Systems, Rensselaer Polytechnic Institute, September 2003–August 2007
- Professor of Mathematical Sciences, The Johns Hopkins University, July 1987–August 2003
- **IPA assignment, Program Director of Applied Mathematics and Computational Mathematics**, National Science Foundation, September 1998–August 2000 (full-time); December 2000–August 2001 (part-time)
- Adjunct Professor, Department of Combinatorics and Optimization, University of Waterloo, May 1994–April 1999
- Professor (September 1985–August 1987); Associate Professor (January 1982–August 1985), School of Management, The University of Texas at Dallas
- Associate Professor (September 1980–December 1981); Assistant Professor (September 1977–August 1980), Graduate School of Industrial Administration, Carnegie-Mellon University
- Assistant Research Scientist, Mathematics Research Center, University of Wisconsin–Madison, September 1976–August 1977.

AWARDS and HONORS

- **Member, the U.S. National Academy of Engineering** (class of 2021)
- **John von Neumann Theory Prize** awarded by the Institute for Operations Research and Management Science (October 2019)
- **Fellow, the Institute for Operations Research and Management Science** (October 2019)
- Co-author of 2015 Signal Processing Society Young Author Best Paper Award for: Gesualdo Scutari, Francisco Facchinei, Peiran Song, Daniel P. Palomar and Jong-Shi Pang: *Decomposition by partial linearization: Parallel optimization of multi-agent systems* published in IEEE Transactions

on Signal Processing. Volume: 62, No. 3 (February 2014)

- 2014 Best Publication Award corresponding to the Energy area of the Energy, Natural Resources and Environment Section within the Institute of Operations Research and Management Science, for the paper with B.F. Hobbs and J. Zhao: *Long-run equilibrium modeling of alternative emissions allowance allocation systems in electric power markets* published in the journal Operations Research
- EURASIP 2011 Best Paper Award for the joint paper with Zhi-Quan Luo: *Analysis of iterative waterfilling algorithm for multiuser power control in digital subscriber lines* published in the Journal on Applied Signal Processing
- **Fellow, the Society of Industrial and Applied Mathematics** (Inaugural class: May 2009)
- 2007 Best Publication Award corresponding to the Energy area of the Energy, Natural Resources and Environment Section within the Institute of Operations Research and Management Science, for the paper with J.E. Harrington, B.F. Hobbs, A. Liu, and G. Roch: *Collusive game solutions via optimization*
- 2006 Best Paper Award for the joint paper with Masao Fukushima: *Quasi-variational inequalities, generalized Nash equilibria, and multi-leader-follower games* published in the journal Computational Management Science
- Winner of the 2004 Kayamori Best Automation Paper Award for the joint paper with Peng Song, Jeff Trinkle, and Vijay Kumar: *Design of part feeding and assembly processes with dynamics*, by the IEEE International Conference on Robotics and Automation
- **Co-winner, the 2003 George B. Dantzig Prize** awarded jointly by the Mathematical Programming Society and the Society of Industrial and Applied Mathematics for original research, which by its originality, breadth and scope, is having a major impact on the field of mathematical programming
- Institute for Scientific Information (ISI) Highly Cited Researcher in the Mathematics Category (identified by ISIHighlyCited.com in March 2003)
- **Co-winner, the 1994 Frederick W. Lanchester Prize** awarded by the Institute for Operations Research and Management Science for the best contributions in operations research in the English language

RESEARCH GRANTS

- **Sole Principal Investigator**

—**National Science Foundation** (April 2017–March 2018) \$15,000; (September 2016–August 2020) \$400,687; (August 2013–August 2016) \$150,000; (July 2010–June 2013) \$240,000; (August 2010 - July 2012) \$110,000; (August 2005–August 2009) \$225,000; (August 2005–August 2010) \$300,000; (August 2002–July 2005) \$218,577; (September 2001–August 2004) \$250,000; (August 1997–July 2000) \$130,429; (September 1996–August 1998) \$127,000; (October 1995–September 1996) \$10,000; (April 1995–March 1998) \$26,000; (March 1993–June 1996) \$164,095; (September 1991–August 1994) \$150,000; (May 1988–October 1991) \$240,600; (August 1984–July 1987) \$95,150; (July 1980–July 1983) \$73,886

—**Air Force Office of Sponsored Research** (December 2024–December 2027) \$649,971; (December 2021–December 2024) \$629,764; (July 2018–July 2021) \$624,371; (March 2015–March 2018) \$369,740; (July 2011–June 2014) \$273,501; (April 2009–November 2011) \$271,990; (March 2008–November 2010) \$360,000

—**Office of Naval Research** (February 15, 2002–September 30, 2003) \$104,000; (January 1993–December 1996) \$319,227

—**Cray Research Inc. University Research & Development Grant Program** (April 1986–

December 1987) \$55,664

- **Co-Principal Investigator**

— **State of California, Department of Transportation (Caltrans)** (June 2023–May 2024) \$100,000; (January 2022–December 2022) \$189,427.13; (January 2020–December 2020) \$100,642;

— **National Science Foundation** (August 2015–August 2018) \$310,000; (August 2010–July 2013) \$340,000; (November 2004–October 2007) \$315,325; (April 2004–March 2005) \$30,000; (September 2002–August 2005) \$430,000

— **Office of Naval Research** (November 2005–October 2008) \$592,157

- **Collaborator**

National Science Foundation (September 2000–August 2002) \$29,606

PATENT

U.S. Patent No. 6,546,375 entitled “Apparatus and Method of Pricing Financial Derivatives”, issued on April 8, 2003. Licensed to Invention Investment Ireland, effective January 16, 2014.

PROFESSIONAL ACTIVITIES

A. Editorial

- **Present:**

Editor-in-Chief, SIAM Journal on Optimization, July 2019–present

- **Past:**

Associate editor, *SIAM Journal on Optimization*, November 2004–June 2019

Editor-in-Chief, Mathematical Programming, Series B, January 2014–December 2017

Associate editor, *Computational Optimization and Applications*, 1991–2007

Associate editor, *Mathematical Programming, Series A*, 1990–2007

Associate editor, *Numerische Mathematik*, December 2003–October 2007

Area editor, Mathematics of Operations Research, 1999–2006

Co-guest editor of *Mathematical Programming, Series B*, Volumes 117 (2009), 196 (2022) 101 (2004), 88 (2000), and 48 (1990)

Guest editor, Volumes 12 and 13, *Computational Optimization and Applications* (1999); special issues in honor of Professor Olvi L. Mangasarian

Associate editor, *Set-Valued Analysis*, 1999–2006

Associate editor, *Mathematics of Operations Research*, 1990–1998

Associate editor, *Journal of Optimization Theory and Applications*, 1996–2001

Editorial board member, *Applied Mathematics Letters*, 1987–2001

Editorial board member, *SIAM Journal on Matrix Analysis and Applications*, 1987–1992

Editorial board member, *Pacific Journal of Optimization*, since inception January 2005

Advisory editor, *Networks and Spatial Economics*, since inception in 2000

B. Roles in Professional Services

- Chair of the external review committee of the Department of Industrial and Systems Engineering, University of Minnesota (March 2023)

- SIAM appointee (2020 and 2006) and Chair (2009), MPS/SIAM George B. Dantzig Prize selection committee

- Academic Advisor, Department of Systems and Engineering Management, City University of Hong Kong (January 2020 through December 2022)

- Overseas Academic Advisor, Department of Mathematics, Hong Kong Polytechnic University (academic years 2018/2019 through 2021/2022)
- Chair of the International Advisory Board, Engineering Systems and Design Pillar, Singapore University Technology and Design (June 2013–June 2016)
- Academic Advisor, Department of Mathematics, Hong Kong Polytechnic University (January 2015 through December 2017)
- Member, Mathematics Departmental Review Committee, National Singapore University (March 2016)
- Steering Committee of the Sixth (Tokyo, Japan 2016; appointed in 2013) and Seventh (Berlin, Germany 2019; appointed in 2015) International Conference on Continuous Optimization
- The 2010 INFORMS Optimization Session Farkas Prize selection committee
- Member (1998) and then Chair (1999), The INFORMS Lanchester Prize Committee
- Chair-Elect (Fall 1996) and then Chair (Fall 1997), The Optimization Section within INFORMS

Member

- Program Committee of the 2017 SIAM Conference on Optimization (Vancouver; May 2017)
- Organizing Committee of the 20th International Symposium on Mathematical Programming (Chicago; August 2009)
- The MPS 2006 Tucker Prize Committee (2006)
- The AAAS Annual Meeting Program Committee (2005–2007)
- The INFORMS Optimization Prize for Young Researchers Committee (1999)

C. Review Panelist

German Research Foundation

DFG-Priority Programme SPP 1962 “Non-smooth and Complementarity-Based Distributed Parameter Systems” (Berlin; March 2019; February 2016)

National Science Foundation

- Division of Civil, Mechanical, and Manufacturing Innovation (May and December 2009; December 2007)
 - Division of Mathematical Sciences (June 2018; March 2011, 2008, 2007, 2006, and 2004)
 - Division of Social, Behavior & Economic Sciences (June 2006)
 - Division of Advanced Infrastructure and Research and Division of Mathematical Sciences (February 2003)
 - Division of Design, Manufacturing, and Industrial Innovations (April 2003)
 - Division of Computer and Communications Research and Division of Mathematical Sciences (November 2001)
 - Division of Graduate Education (September 2000)
- Conference Board of the Mathematical Sciences (May 1998)
 Division of Computer and Computation Research (November 1996)

Office of Naval Research, Member of the Board of Visitors, Mathematical, Computer, and Information Sciences Division, (June 2001)

Department of Energy

- Office of Advanced Scientific Computing Research, Applied Mathematics Program (June 2008)
- Applied Mathematical Sciences Research Program (April 1993)

D. Past referee

- Funding agencies (for proposal reviews)

National Science Foundation, Research Grants Council (RGC) of Hong Kong, Department of Energy, Air Force Office of Scientific Research, National Science and Engineering Research Council (Canada), Australian Research Council, North Atlantic Treaty Organization

- Professional journals

Mathematical Programming, Mathematics of Operations Research, ASME Journal of Applied Mechanics, Journal of Computer Methods in Applied Mechanics and Engineering, Archive for Rational Mechanics and Analysis, International Journal of Solids and Structures, Zeitschrift für Angewandte Mathematik und Mechanik, Journal of Optimization Theory and Applications, SIAM Journal on Control and Optimization, SIAM Journal on Optimization, SIAM Journal on Applied Mathematics, Linear Algebra and its Applications, Operations Research, Management Science, Journal of Regional Science, Transportation Science, Zeitschrift für Operations Research, Naval Research Logistics Quarterly, European Journal of Operations Research

E. Organizer of Conferences and Special Sessions

- Co-chair and co-local host, the Eighth International Conference on Continuous Optimization (University of Southern California 2025)
- Lead organizer and local host, Conference on Nonconvex Statistical Learning (University of Southern California: May 2017)
- Co-organizer and co-local host, Workshop on Stochastic Optimization and Equilibrium (University of Southern California: October 2015)
- Co-Director and lecturer, the Centro Internazionale Matematico Estivo School on Centralized and Distributed Multi-agent Optimization: Models and Algorithms (Cetraro, Italy: June 2014)
- Co-organizer, Workshop on Computational Contact Mechanics: Advances and Frontiers in Modeling Contact (Banff, Canada, February 2014)
- Chair of Organizing committee, Initiative of Mathematical Sciences and Engineering Summer School on Multi-Agent Networked Systems, University of Illinois at Urbana-Champaign (August 2013)
- The International Conference on Complementarity Problems
Program committee member (Fourth: Stanford, California, August 2005; Third: Cambridge, England, July 2002)
Co-organizer (Second: Madison, Wisconsin, June 1999)
Local host and co-organizer (First: The Johns Hopkins University, November 1995)
- Co-organizer, the First DaVinci-Siconos joint meeting (Grenoble, France; July 2005)
- Program Committee Chair and Local Organizing Committee Co-Chair, the First International Conference on Continuous Optimization (Troy, New York; August 2004)
- Member, International Program Committee of The 5th International Conference on Optimization: Techniques and Applications (Hong Kong; December 2001)
- Co-organizer, special session “Mathematics of Optimization” within the Joint Conference of AMS and HKMS (Hong Kong; December 2000)
- Co-organizer, minisymposium on “Numerical Simulation of Rigid Body Systems using Complementarity Methods” in the First SIAM Conference on Computational Science and Engineering (Washington D.C.; September 2000)
- Co-organizer, Fields Institute Workshop on Interior-Point and Homotopy Methods in Mathematical Programming (Victoria, Canada; May 1996)

- Member, International advisory committee, International Symposium on Mathematical Programming (1994, 1997)
- Cluster chair at ORSA/TIMS and INFORMS meetings (October 1990; May 1991; November 1996)
- Local host and organizer, The 13th Johns Hopkins Mathematical Sciences Summer Lecture Series featuring Professor Arthur F. Veinott, Jr. as the Principal Lecturer (August 1989)
- Co-organizer, Workshop on Iterative Methods for Mathematical Programs (Stanford University; April 1986)
- Chair and organizer of many invited sessions at INFORMS, ORSA/TIMS and other regional and international conferences

SUPERVISION OF PH.D. STUDENTS and POSTDOCS

A. Principal Advisor

Current advisees:

- Xinyao Zhang, Department of Industrial and Systems Engineering, University of Southern California (expected completion: December 2025)
- Wei Gu (secondary advisor), Department of Industrial and Systems Engineering, University of Southern California (expected completion: May 2025)
- Jingwei Ji, Department of Industrial and Systems Engineering, University of Southern California (expected completion: May 2025)
- Yulin Peng, Tram Le Nguen Ngoc, and Lesley Hou (all first-year doctoral students), Department of Industrial and Systems Engineering, University of Southern California

Graduated advisees:

- Ziyu He, Department of Industrial and Systems Engineering, University of Southern California (August 2023). Initial appointment – Marshall Business School (USC)
- Yunan Zhu, Department of Industrial and Systems Engineering, University of Southern California (August 2020). Initial appointment – Facebook
- Maher Nouiehed (co-supervised with Meisam Razaviyayn), Department of Industrial and Systems Engineering, University of Southern California (May 2019). Initial appointment – American University of Beirut, Lebanon
- Mi Ju Ahn, Department of Industrial and Systems Engineering, University of Southern California (June 2018). Initial appointment – Southern Methodist University
- Tianyu Hao, Department of Industrial and Systems Engineering, University of Southern California (May 2018). Initial appointment – Facebook
- Fuyuan Wang, Department of Industrial and Enterprise Systems Engineering, University of Illinois at Urbana-Champaign (July 2014). Initial appointment – Goldman Sachs New York
- Alberth Alvarado, Department of Industrial and Enterprise Systems Engineering, University of Illinois at Urbana-Champaign (August 2014). Initial appointment – Universidad Galileo, Guatemala
- Dane Schiro, Department of Industrial and Enterprise Systems Engineering, University of Illinois at Urbana-Champaign (August 2013). Initial appointment – New England ISO
- Yu-Ching Lee, Department of Industrial and Enterprise Systems Engineering, University of Illinois at Urbana-Champaign (December 2012). Initial appointment – University of Illinois at Urbana-Champaign
- Andrew Liu, Department of Applied Mathematics and Statistics, The Johns Hopkins University, Baltimore (June 2009). Initial appointment – Purdue University

- Jing Hu, Department of Mathematical Sciences, Rensselaer Polytechnic Institute, New York (September 2008). Initial appointment – AutoZone Inc.
- Chaoxiong Wang, Department of Mathematical Sciences, Rensselaer Polytechnic Institute (May 2008)
- Lanshan Han, Department of Decision Science and Engineering Systems, Rensselaer Polytechnic Institute (December 2007). Initial appointment – University of Illinois at Urbana-Champaign
- Jinye Zhao, Department of Mathematical Sciences, Rensselaer Polytechnic Institute (December 2007). Initial appointment – New England ISO
- Fu Yan, Department of Mathematical Sciences, Rensselaer Polytechnic Institute (May 2007). Initial appointment – Barclays Bank
- Alvin Lim, Department of Mathematical Sciences, The Johns Hopkins University (May 2002). Initial appointment – Delta Technology. [Ph.D. thesis won the 2002 Best Dissertation Award in the Transportation Science Section within INFORMS]
- Jim Tzitzouris, Department of Mathematical Sciences, The Johns Hopkins University (September 2001). Initial appointment – T. Rowe Price Investment Services, Inc.
- Carolyn Metzler, Department of Mathematical Sciences, The Johns Hopkins University (May 2000)
- Jacqueline Huang, Department of Mathematical Sciences, The Johns Hopkins University (August 1999). Initial appointment – Cornell University
- Grace Lo, Department of Mathematical Sciences, The Johns Hopkins University (January 1997). Initial appointment – ICF Kaiser International
- Tao Wang, Department of Mathematical Sciences, The Johns Hopkins University (May 1995). Initial appointment – TransQuest Information Solutions
- Steve A. Gabriel, Department of Mathematical Sciences, The Johns Hopkins University (January 1992). Initial appointment – The Johns Hopkins University and Arthur D. Little, Inc.
- Zhi Ping Wang, Department of Mathematical Sciences, The Johns Hopkins University (October 1990). Initial appointment – Morgan State University
- Narayan Rangaraj, Department of Mathematical Sciences, The Johns Hopkins University (June 1990). Initial appointment – Indian Institute of Technology, Bombay
- Jeng Ming Yang, School of Management, The University of Texas at Dallas (August 1987). Initial appointment – National Cheng-Chi University
- Yu Yang Lin, School of Management, The University of Texas at Dallas (December 1985). Initial appointment – National Sun Yat-Sen University
- Patrick S.C. Lee, Graduate School of Industrial Administration, Carnegie-Mellon University (December 1984).
- Donald Chan, Graduate School of Industrial Administration, Carnegie-Mellon University (April 1982). Initial appointment – New York University

B. Postdoctoral Fellows

- Shaoning Han, Department of Industrial and Systems Engineering, University of Southern California (September 2022–June 2024)
- Junyi Liu, Department of Industrial and Systems Engineering, University of Southern California (September 2019–March 2021)
- Ying Cui, Department of Industrial and Systems Engineering, University of Southern California (July 2017–January 2020)
- Qin Ba, Department of Industrial and Systems Engineering, University of Southern California

(March 2018–June 2019)

- Meisam Razaviyayn, Department of Industrial and Systems Engineering, University of Southern California (June–August 2014)
- Yun (Bella) Bai, Department of Industrial and Enterprise Systems Engineering, University of Illinois at Urbana-Champaign (January–August 2013)
- Gesualdo Scutari, Department of Industrial and Enterprise Systems Engineering, University of Illinois at Urbana-Champaign (January–December 2010)
- Weihong Yang, Department of Industrial and Enterprise Systems Engineering, University of Illinois at Urbana-Champaign (March–December 2008)
- Lanshan Han, Department of Industrial and Enterprise Systems Engineering, University of Illinois at Urbana-Champaign (December 2007–August 2010)
- Jinglai Shen, Department of Mathematical Sciences, Rensselaer Polytechnic Institute (January 2004–August 2006)
- Xiaoyun Ji, Department of Mathematical Sciences, Rensselaer Polytechnic Institute (January 2005–June 2006)

C. Host to Visiting Scholars and Students

- Tao Min, Department of Mathematics, Nanjing University, (February 2016–February 2017)
- Meisam Razaviyayn, Department of Industrial and Systems Engineering, University of Southern California (January–May 2014)
- Defeng Sun, Department of Mathematics, National University of Singapore, Singapore (August–December 2008)
- Minru Bai, College of Mathematics and Econometrics, Hunan University, Changsha, Hunan, People’s Republic of China

D. Second Reader/Invited Examiner of Ph.D. dissertations/defense

- Zhengling Qi, Department of Statistics and Operations Research, University of North Carolina, Chapel Hill (June 2019)
- Francisco Jara-Moroni, Department of Industrial Engineering and Management Sciences Northwestern University (June 2018)
- Rui Ma, Department of Civil and Environmental Engineering, Rensselaer Polytechnic Institute (December 2013)
- Yun Bai, Department of Civil and Environmental Engineering, University of Illinois at Urbana-Champaign (December 2012)
- G. Ramadurai, Department of Civil and Environmental Engineering, Rensselaer Polytechnic Institute (June 2009)
- S. Berridge, Department of Econometrics and Operations Research, Tilburg University (June 2004)
- D. Sampangi Raman, Indian Statistical Institute, New Delhi (May 2003)
- X. Zheng, Department of Mathematics, Chinese University of Hong Kong (December 2002)
- W. Yang, Department of Mathematics, Chinese University of Hong Kong (December 2002)
- W. Lin, Department of Information Systems, National University of Singapore (November 2002)
- P. Song, Department of Mechanical Engineering, University of Pennsylvania (September 2002)
- J. Liu, Department of Operations Research, George Washington University, (April 1995)
- G.S.R. Murthy, Division of SQC and OR, Indian Statistical Institute, Madras (September 1994)

- R. Sznajder, Department of Mathematics and Statistics, University of Maryland Baltimore County (May 1994)
- G. Chen, Department of Mathematics and Statistics, University of Maryland Baltimore County (May 1993)
- A.J. Kozansky, Department of Mathematical Sciences, The Johns Hopkins University (May 1991)
- B.C. Xiao, Department of Decision Sciences, The Wharton School, University of Pennsylvania (October 1990)
- B.T. Chen, Department of Decision Sciences, The Wharton School, University of Pennsylvania (October 1990)
- Y. Chang, Department of Mathematical Sciences, The Johns Hopkins University (August 1988)
- T.H. Shiau, Computer Sciences Department, University of Wisconsin – Madison (August 1983)
- K. Sidharthan, School of Urban and Public Affairs, Carnegie-Mellon University (May 1981)

SOCIETY MEMBERSHIPS

Current:

- Mathematical Optimization Society (formerly, Mathematical Programming Society)
- Society of Industrial and Applied Mathematics

Past:

- Institute for Operations Research and Management Science (formerly Operations Research Society of America and The Institute of Management Science)

RESEARCH INTERESTS

- Mathematical programming: theory, methods, and applications
- Finite-dimensional variational inequalities and complementarity problems
- Decision making under uncertainty
- Computational non-cooperative games
- Computation of equilibria
- Electricity market designs and energy modeling
- Frictional contact problems and structural mechanics
- Financial optimization and options pricing

PRESENTATIONS and LECTURES (including only those from 1991 till present)

A. International Conferences

- Invited speaker, the 25th International Symposium on Mathematical Programming (Montreal: July 2024)
- Invited lecturer, One-World Optimization Seminar in Vienna (Austria: June 2024)
- Plenary lecturer, Workshop on Stochastic Programming (Hunan, China: April 2024)
- Invited lecturer, The Second HKSIAM Biennial Meeting (The Chinese University of Hong Kong: August 2023)
- Invited lecturer, Workshop on Optimization, Equilibrium, and Complementarity (Hong Kong: August 2023)
- Invited lecturer, Foundations of Computational Mathematics (Paris: June 2023)
- Keynote speaker, Data Science and AI Forum (City University of Hong Kong: May 2023)
- Invited lecturer, International Workshop on Stochastic Programming (Nanjing: April 2023)
- Invited lecturer, SIAM Conference on Computational Science and Engineering (Amsterdam: February 2023)
- Distinguished lecturer, Optimization in the Big Data Era: Workshop 2 (Singapore: December 2022)
- Plenary speaker, Robustness and Resilience in Stochastic Optimization and Statistical Learning: Mathematical Foundations (Erice, Italy: May 2022; unable to attend due to the COVID-19 pandemic)
- Invited lecturer, One World Optimization Seminar Series (virtual: September 2020)
- Invited lecturer, Autumn School on quasi-variational inequalities the University of Wuerzburg (Würzburg, Germany: September 2019)
- Plenary speaker, The XV International Stochastic Programming (ICSP 2019) conference (Trondheim, Norway: July 2019)
- Invited speaker, Special Session on Optimization and Variational Analysis, the Vietnam-USA Joint Mathematical Meeting (Quy Nhon, Vietnam: June 2019)
- Invited lecturer, Department of Systems Engineering and Engineering Management, City University of Hong Kong (June 2019)
- Invited speaker, Mathematics Workshop on Electricity systems of the future: incentives, regulation and analysis for efficient investment, Cambridge University (Cambridge, England: March 2019)
- Invited speaker, Workshop on New Computing-Driven Opportunities for Optimization (Wuyishan, Fujian, China: August 2018)
- Invited speaker, The Triennial International Symposium on Mathematical Programming (Bordeaux, France: August 2018)
- Keynote speaker, The Second Pacific Optimization Conference (Perth, Australia: December 2017)
- Plenary speaker, The Workshop on Variational Analysis and Stochastic Programming (Hong Kong: December 2017; 2018)
- Invited speaker, The 15th EUROPT Workshop on Continuous Optimization (Montreal, Canada: July 2017)
- Invited speaker, Workshop on Optimization, Baptist University (Hong Kong: May 2017)
- Invited speaker, SIAM Conference on Optimization (Vancouver: May 2017)
- Plenary speaker, The Third International Conference on Engineering and Computational Math-

ematics, Hong Kong Polytechnic University (May 2017)

- Distinguished lecturer, Research Forum, Optimization and Statistics Learning in Big Data Analytics, Hong Kong Polytechnic University (January 2017)
- Invited speaker, The International Workshop on Continuous Optimization: Challenges and Applications, The Technion (Haifa, Israel: September 2016)
- Plenary speaker, The Fifth International Conference on Continuous Optimization (Tokyo: August 2016)
- The 5th Workshop on Optimization and Risk Management, Hong Kong Polytechnic University (Hong Kong: June 2016)
- Invited speaker, Tenth U.S.–Mexico Workshop on Optimization and its Applications (Merida, Mexico: January 2016)
- Invited speaker, The International Congress on Industrial and Applied Mathematics (Beijing, China: August 2015)
- Plenary speaker, Modelling, Computation and Optimization in Information Systems and Management Sciences (Metz, France: May 2015)
- Invited speaker, International Conference on Variational Analysis, Optimization, and Quantitative Finance (Université de Limoges, France: May 2015)
- Plenary speaker, South Pacific Continuous Optimization Meeting (Adelaide, Australia: February 2015)
- Plenary speaker, Optimization Session, 8th Australia New Zealand Mathematics Convention (Melbourne, Australia: December 2014)
- Invited speaker, Platform Technologies Research Institute and School of Mathematical and Geospatial Sciences (Royal Melbourne Institute of Technology, Australia: December 2014)
- Invited speaker, Workshop on Optimization for Modern Computation (Peking University, Beijing, China: September 2014)
- Invited speaker, 6th International Conference on Complementarity Problems (Humboldt Universität zür Berlin, Germany: August 2014)
- Invited speaker, Workshop on Nonlinear Analysis and Optimization Center for Mathematical Sciences (Technion, Israel, June 2014)
- Invited speaker, The Second Joint International meeting of the Israel Mathematical Union and American Mathematical Society (Tel Aviv, Israel: June 2014)
- Invited tutorial lecturer, The ISERC Tutorial Session on Game Theory The IIE Annual Conference & Expo (Montreal, Quebec, Canada: June 2014)
- Invited speaker, Workshop on Computational Contact Mechanics: Advances and Frontiers in Modeling Contact (14w5147) (Banff, Calgary, Canada: February 2014)
- Invited speaker, Mini-Symposium of Production and Service Optimization, National Tsing Hua University (Hsing Chu, Taiwan: December 2013)
- The 9th (keynote), 8th, 6th, and 3rd (invited) International Conference on Optimization: Techniques and Applications (Taipei, Taiwan: December 2013; Shanghai, China: December 2010; Ballarat, Australia: December 2004; Hong Kong: December 2001)
- Invited speaker, The Fourth International Conference on Continuous Optimization (Lisbon, Portugal; August 2013)
- Invited speaker, XIII International Conference on Stochastic Programming (Bergamo, Italy; July 2013)
- Invited speaker, 11th EUROPT Workshop on Advances in Continuous Optimization (Florence,

Italy: June 2013)

- Workshop 3: Complementarity And Its Extensions Optimization. Computation, Theory and Modeling, Institute for Mathematical Sciences, National University of Singapore (December 2012)
- Invited speaker, Workshop on Mathematical Issues in Information Systems (Xi'An, China: July 2012)
- Invited lecturer, Summer School on Nonsmooth Contact Mechanics: Modeling Simulation (Aussois, France; September 2012)
- Keynote speaker, Workshop on Modern Optimization in honor of Professor Yue Mingyi (Tsinghua University, Beijing, June 2011)
- Invited speaker, SIAM Conference on Optimization (Darmstadt, Germany; May 2011)
- Invited speaker, International School of Mathematics “G. Stampacchia”, Workshops on Nonlinear Programming (Erice, Italy; June 2013; July 2010; August 2007; June 2004; June 1998; June 1995)
- Invited one-hour, International Congress of Chinese Mathematicians (Tsinghua University, Beijing, December 2010)
- Plenary, The Chinese Mathematical Programming Conference (Shanghai, May 2010)
- Invited speaker, special session on Nonsmooth Dynamical Systems–Analysis, Modeling and Numerical Techniques, 8th AIMS International Conference on Dynamic Systems and Differential Equations, Technische Universität Dresden (Germany; May 2010)
- Invited lecturer, CIMPA-UNESCO-Vietnam School on Variational Inequalities and Related Problems, Hanoi Institute of Mathematics (Vietnam; May 2010)
- Invited speaker, International Conference on Linear Programming Algorithms and Extensions (Haikou, China; May 2009)
- Distinguished, Department of Applied Mathematics, Hong Kong Polytechnic University (April 2008)
- Plenary, The Operations Research Society of China National Meeting (Beijing, October 2008)
- Semiplenary, The Triennial International Symposium on Mathematical Programming (Chicago, August 2009; Lausanne, Switzerland, August 1997)
- Keynote, The 2nd International Conference on Nonlinear Programming with Applications, Beijing (April 2008)
- Invited, The 33rd Conference on the Mathematics of Operations Research, Lunteren, The Netherlands (January 2008)
- Invited speaker, Workshop on Optimization and Signal Processing (Hong Kong; December 2007)
- Plenary, The International Conference on Nonconvex Programming, Local and Global Approaches, Theory, Algorithms and Applications, Rouen, France (December 2007)
- Invited speaker, the 30th International Conference of the International Association for Energy Economics (Wellington, New Zealand; February 2007)
- Invited speaker, Mathematical Programming in Machine Learning and Data Mining (Banff, Canada; January 2007)
- Invited speaker, Minisymposium on Differential variational inequalities, 6th International Congress on Industrial and Applied Mathematics (Zurich, Switzerland; July 2006)
- Invited speaker, 22nd European Conference on Operational Research (July 2006)
- Invited speaker, Workshop: Complexity of Games, Polyhedra and Lattice Points, FIM (Institute for Mathematical Research), ETH Zürich (Zürich, Switzerland; May 2006)
- Invited speaker, Canada-Chile Meeting on the Mathematics of Economic Geography and Natural Resource Management (Banff, Canada; November 2005)

- The 3rd (keynote) Singapore-Sino-Japanese (Singapore: October 2005) and 2nd Japanese-Sino Optimization meeting (Kyoto, Japan: September 2002)
- Plenary, International Conference on Complementarity, Duality, and Global Optimization in Engineering Science, Virginia Institute of Technology, Blacksburg (August 2005)
- Invited speaker, First DaVinci-Siconos joint meeting (Grenoble, France; July 2005)
- Invited speaker, 8th SIAM Conference on Optimization (Stockholm, Switzerland; May 2005)
- Invited, III Chile Summer School on Optimization, Santiago, Chile (January 2005)
- Invited speaker, International Workshop on Optimization and Game Theory, Kyoto University (Kyoto, Japan; October 2004)
- Invited speaker, The 4th Annual McMaster Optimization Conference: Theory and Applications (McMaster, Canada; July 2004)
- The 18th (invited) and 14th International Symposium on Mathematical Programming (Copenhagen, Denmark: August 2003; Amsterdam, The Netherlands; August 1991)
- Invited speaker in two minisymposia, The 5th International Congress on Industrial and Applied Mathematics (Sydney; July 2003)
- Invited speaker, International Conference on Mathematical Programming (Shanghai; December 2002)
- Plenary, IV Brazilian Workshop on Continuous Optimization, Rio de Janeiro, Brazil (July 2002)
- Invited speaker, Minisymposium on Financial Optimization, SIAM Conference on Optimization (Toronto; May 2002)
- Invited speaker, Workshop on Optimization (Oberwolfach, Germany: January 2002 and 2000)
- Plenary, 20th IFIP TC7 Conference on System Modeling and Optimization, Trier, Germany (July 2001)
- IFORS Distinguished, APORS'2000 Conference, Singapore (July 2000)
- Invited speaker, International Conference on Nonlinear Programming and Variational Inequalities (Hong Kong; December 1998)
- Invited in the Graduiertenkolleg "Geometry and Nonlinear Analysis", Buckow, Germany (October 5-9, 1998); could not make due to programmatic duties at the National Science Foundation
- Invited speaker, First Pacific Rim Conference on Mathematics (Hong Kong; January 1998)
- Invited, Tutte Seminar Series, Department of Combinatorics and Optimization, University of Waterloo (January 1997)
- Invited speaker, Unilateral Problems in Structural Analysis 5 (Ferrara, Italy; June 1997)
- Invited one-hour speaker, The 5th Symposium on Generalized Convexity (Luminy Marseille, France; June 1996)
- Invited speaker in minisymposium, The 5th SIAM Conference on Optimization (Victoria, Canada; May 1996)
- Invited, the 1996 Distinguished Lecture Series of the Computer Sciences Department, University of Wisconsin, Madison (April 1996)
- The 4th International Conference on Parametric Optimization and Related Topics (Enschede, The Netherlands; June 1995)
- Invited speaker, Workshop on Bilevel Programming (Linköping, Sweden; November 1995)
- Invited speaker, The 3rd Asian-Pacific Operational Research Societies Conference (Fukuoka, Japan; July 1994)
- Invited speaker, The 7th French-German Conference on Optimization (Dijon, France; June 1994)
- Invited one-hour speaker, Workshop on Large-Scale Optimization (Coimbra, Portugal; July 1991)

B. U.S. Conferences

- Invited speaker, FerrisFest 2024: Optimization Models, Algorithms, and Applications (July 2024)
- Invited speaker, Workshop on AI, Data, and Decisions at the University of Arizona, Tucson (October 2023)
- Invited speaker, The Fourth Bay Area Optimization Meeting, Stanford University (May 2018)
- Invited speaker, Special Session on Recent Advances in Optimization and Statistical Learning, AMS Spring Western Sectional Meeting (Pullman: April 2017)
- Featured speaker, Transition workshop of the SAMSI optimization program (Chapel Hill: May 2017)
- Department of Management Science and Engineering, A conference in memory of Che-Lin Su, Stanford University (July 2016)
- Invited panelist, INFORMS New Faculty Colloquium (San Francisco: November 2014; Philadelphia: November 2015)
- Invited speaker, The Sixth Annual Southern California Symposium on Network Economics and Game Theory (Caltech: November 2014)
- Keynote speaker, NetEcon11, 6th Workshop on the Economics of Networks, Systems, and Computation (San Jose, California; June 2011)
- Invited speaker, A celebration of Professors Richard (Dick) Cottle and Arthur (Pete) Veinott, Jr. (Stanford University; June 2011)
- Plenary speaker, The 12th Annual Midwest Optimization Meeting (Wayne State University; October 2010)
- Invited speaker, NSF Symposium on the Low Carbon Footprint Supply Chain (Arlington Virginia; October 2010)
- Invited speaker, Optimization in Energy Systems Workshop hosted by the Institute of Computing in Science (ICiS) (Snowbird Utah; August 2010)
- Invited speaker, Optim-A, Conference on Optimization Applications in Engineering and Applied Science (Champaign Illinois; March 2009)
- Invited speaker, Minisymposium on Games, Computation and Learning, SIAM Optimization Meeting (Boston Massachusetts; May 2008)
- Invited speaker, West Coast Optimization Meeting (Seattle, Washington; April 2007)
- Invited speaker, Minisymposium on Differential variational inequalities, SIAM Annual Meeting (Boston Massachusetts; July 2006)
- Invited speaker, The 4th Columbia Optimization Day (Columbia, New York; November 2004)
- Invited speaker, The D(antzig)V(einott)C(ottle) Birthday Celebration (Stanford, California; November 2004)
- Invited speaker, the Fifth Alan Goldman Lecture, Department of Mathematical Sciences, The Johns Hopkins University, Baltimore (October 2003)
- Minisymposium organizer and speaker, The First SIAM Conference on Computational Science and Engineering (Washington D.C.; September 2000)
- Invited speaker, The 20th International Congress of Theoretical and Applied Mechanics (Chicago, Illinois; August 2000)
- The 17th and 15th International Symposium on Mathematical Programming (Atlanta, Georgia: August 2000; Ann Arbor, Michigan: August 1994)
- Second South-Eastern Linear Algebra Meeting (Williamsburg, Virginia; March 1996)
- The 17th, 16th, and 14th Symposium on Mathematical Programming With Data Perturbations

(Washington, D.C.; May 1995, 1994, 1992)

- Conference on Large-Scale Optimization (Gainesville, Florida; February 1993)
- Invited participant at the IMA Workshop on Nonsmooth Analysis and Geometric Methods in Deterministic Optimal Control (Minneapolis, Minnesota; February 1993)
- INFORMS National Meeting (Austin, Texas: November 2010; San Francisco, California: November 2005; Miami, Florida: November 2001; Seattle, Washington: October 1998; Montreal, Quebec: May 1998; Atlanta, Georgia: November 1996)
- ORSA/TIMS National Meeting (Chicago, Illinois: May 1993; Phoenix, Arizona; November 1993; San Francisco, California: November 1992)
- Symposium on Parallel Optimization 3 (Madison, Wisconsin; July 1993)
- Fourth SIAM Conference on Optimization (Chicago, Illinois; May 1992)
- Second International Conference on Industrial and Applied Mathematics (Washington, D.C.; July 1991)

C. Invited talks

- Department of Applied Mathematics, Hong Kong Polytechnic University (May 2024)
- School of Sciences and Engineering, The Chinese University of Hong Kong at Shenzhen (April 2024)
- Department of Industrial and Systems Engineering, Georgia Institute of Technology (November 2023)
- Department of Industrial Engineering and Operations Research, University of California at Berkeley (October 2023)
- Department of Computational Mathematics and Operations Research, Rice University (April 2023)
- (virtual) Department of Mathematics, Nanjing University (Nanjing, February 2022)
- (virtual) Fall Engineering Science Seminar Series, Peking University (Beijing, November 2021)
- (virtual) Sayas Numerics Seminar, George Mason University (November 2021)
- (virtual) College of Engineering Science Webinar Series, Peking University (November 2021)
- (virtual) Workshop on Optimization and Operator Theory, Technion, Israel (November 2021)
- (virtual) INFORMS Student Chapter, Lehigh University (November 2021)
- (virtual) Seminar Series, Department of Electrical Engineering, University of California at Los Angeles (October 2021)
- Colloquium, Department of Mathematics, Southern Methodist University (May 2019)
- Keynote Speaker, the SMU DCII Workshop on Operations Research and Statistics: Toward Integrated Analytics Southern Methodist University (April 2019)
- Operations Research Seminar Series, Department of Mathematics, Simon Fraser University (October 2018)
- Seminar Series, Department of Industrial Engineering and Management Science, Northwestern University (October 2018; October 2011; November 2008)
- School of Industrial Engineering, Purdue University (April 2018)
- Department of Statistics and Operations Research, University of North Carolina at Chapel Hill (May 2017)
- Department of Statistics, Penn State University, State College (May 2017)
- Optimization Seminar and Mathematics Colloquium, University of California at San Diego (April 2017)
- Department of Mathematics, Applied Mathematics Colloquium, University of California at Los Angeles (October 2017)

Angeles (November 2016)

- Computing and Mathematical Sciences Colloquium Series, California Institute of Technology (October 2016)
- Laboratory for Theoretical and Applied Computer Science, Université de Lorraine (Metz, France: June 2016)
- The Chinese University of Hong Kong Shenzeng, China (January 2017; May 2016)
- Department of Mathematics, University of California at Irvine (October 2015)
- Department of Industrial and Operations Engineering, University of Michigan (April 2015)
- Department of Financial Engineering and Operations Research, Princeton University (October 2014)
- Communications, Networks, and Systems Seminar The Minh Hsieh Department of Electrical Engineering, University of Southern California (April 2014)
- Department of Mathematics, National Cheng Kung University (Tainan, Taiwan: December 2013)
- The Pillar of Engineering Systems and Design, Singapore University of Technology and Design (October 2013)
- Department of Statistics, The University of Chicago (February 2012)
- Department of Decision Sciences, National University of Singapore (December 2011)
- Department of Mathematics, University of California at Davis (December 2011)
- Mathematics and Computer Science Division, Argonne National Laboratory (June 2011)
- Operations/Management Science Seminar, Booth School of Business, The University of Chicago (November 2010)
- Department of Industrial Engineering & Logistics Management, Hong Kong University Science and Technology (September 2010)
- Department of Industrial and Manufacturing Systems Engineering, Iowa State University (March 2010)
- School of Industrial Engineering, INFORMS Purdue University Chapter (March 2010)
- Industrial and Systems Engineering Program, University of Minnesota (October 2009)
- Dipartimento di Informatica e Sistemistica, Università di Roma “La Sapienza” (January 2009, June 1997)
- Joint Colloquium, Department of Mathematics and Department of Systems Engineering and Engineering Management, The Chinese University of Hong Kong (October 2008)
- Colloquium, School of Operations Research and Information Engineering, Cornell University (April 2007)
- Department of Mathematics and Statistics, University of Maryland Baltimore County, (January 2007)
- Department of General Engineering, University of Illinois, Urbana-Champaign (October 2005)
- Department of Computer Science, McGill University (October 2004)
- Department of Econometrics and Operations Research, Tilburg University, The Netherlands (June and September 2004)
- Department of Industrial and Systems Engineering, University of Florida Gainesville (March 2004; April 1992)
- Department of Systems Engineering and Engineering Management, The Chinese University of Hong Kong (December 2003)
- Department of Applied Mathematics, Hong Kong Baptist University (December 2003)
- Department of Industrial Engineering and Operations Research, Columbia University (October

2003)

- West Coast Optimization Meeting, University of Washington, Seattle (May 2003)
- Department of Mathematical Sciences, Rensselaer Polytechnic Institute (January 2003)
- Department of Computing and Software, McMaster University, Canada (November 2002)
- Department of Industrial and Systems Engineering, Georgia Institute of Technology (October 2002)
- Department of Operations Research and Financial Engineering, Princeton University (January 2002)
- Department of Decision Sciences, National University of Singapore, Singapore (December 2001)
- Department of Systems and Industrial Engineering, University of Arizona, Tucson (October 2001)
- Quantitative Analysis Department, Pacific Gas and Electric National Energy Group, Bethesda (October 2001)
- Department of Mathematical Sciences, IBM Thomas J. Watson Research Center, IBM (May 2001)
- Department of Mathematics, University of California, Los Angeles (December 2000)
- Mathematical Finance Seminar, New York University (December 1999)
- Courant Institute of Mathematical Sciences, New York University (February 1999)
- Department of Operations Research and Engineering, George Mason University (October 1997)
- University of New South Wales, Department of Applied Mathematics, Australia (December 1996; August 1993)
- The University of Melbourne, Department of Mathematics, Australia (December 1996; July 1993)
- The Chinese University of Hong Kong, Department of Mathematics, Hong Kong (August 1996)
- Massachusetts Institute of Technology, Operations Research Center (February 1996)
- University of Pennsylvania, Department of Systems Engineering (October 1995)
- Tokyo Institute of Technology, Department of Mathematical and Computing Sciences, Japan (August 1995)
- Nara Institute of Science and Technology, Graduate School of Information Science, Japan (August 1995; July 1994)
- Linköping University, Department of Mechanical Engineering, Sweden (November 1995)
- Academia Sinica, Institute of Applied Mathematics, China (August 1994)
- University of Waterloo, Department of Combinatorics and Optimization, Canada (November 1994)
- Old Dominion University, Department of Mathematics and Statistics (March 1993)
- Australian National University, Center for Mathematics and Applications, Australia (September 1993)
- Virginia Polytechnic Institute and State University (October 1993)
- McMaster University, Communications Research Laboratory, Canada (October 1993)
- University of Wisconsin–Madison, Computer Science Department (October 1993)
- (April 1992)
- University of Miami, Department of Industrial Engineering (April 1992)
- National Tsing-Hua University, Department of Applied Mathematics, Taiwan (August 1992)
- Wayne State University, Department of Mathematics (November 1992)

Books

(with Y. Cui) *Modern Nonconvex Nondifferentiable Optimization*. MOS–SIAM Series on Optimization, SIAM Publications, Philadelphia (December 2021).

(with F. Facchinei) *Finite-Dimensional Variational Inequalities and Complementarity Problems*. Volumes I and II, Springer-Verlag, New York (2003).

(with Z.Q. Luo and D. Ralph) *Mathematical Programs With Equilibrium Constraints*. Cambridge University Press, Cambridge, England (1996).

(with R.W. Cottle and R.E. Stone) *The Linear Complementarity Problem*. SIAM Classics in Applied Mathematics 60, Philadelphia (2009) [Originally published by Academic Press, Boston (1992)] winner of the 1994 Frederick W. Lanchester Prize awarded by INFORMS.

Edited Books and Special Journal Volumes

(with K. Bennett, M. Ferris, M. Solodov, and S.J. Wright) *Mathematical Programming, Series B: Hierarchical Optimization* <https://doi.org/10.1007/s10107-022-01911-7> (December 2022).

(with F. Facchinei) *Multi-Agent Optimization: Cetraro, Italy 2014*. Lecture Notes in Mathematics SubSeries: C.I.M.E. Foundation Subseries. Springer International Publishing AG, Cham (June 2018).

(with J. Xin and Y. Liu) *Mathematical Programming, Series B*, Volume (2019): Nonconvex Optimization for Statistical Learning.

(with D. Ralph) *Mathematical Programming, Series B*, Volume 117, Numbers 1 and 2 (2009): Nonlinear Programming, Variational Inequalities, and Stochastic Programming.

(with M.C. Ferris, D. Ralph, and S. Scholtes), *Mathematical Programming, Series B*, Volume 101 (2004): Complementarity Problems, 40 years on.

(with M.C. Ferris and O.L. Mangasarian), *Complementarity: Applications, Algorithms, and Extensions*, Kluwer Academic Publishers Dordrecht (2001).

(with Z.Q. Luo) *Mathematical Programming, Series B*, Volume 88, Number 2 (2000): Error Bounds in Mathematical Programming.

Computational Optimization and Applications, Volumes 12 and 13, (1999): A Tribute to Olvi L. Mangasarian.

(with M.C. Ferris), *Variational and Complementarity Problems: State of the Art*, SIAM Publications, Philadelphia (1997).

(with R.W. Cottle and J. Kyparisis), *Mathematical Programming, Series B*, Volume 48, Numbers 2 and 3 (1990): Variational Inequalities and Complementarity Problems.

Refereed Articles in Archival Journals

2024

(with Y. Cui and S. Han) Analysis of a class of minimization problems lacking lower semicontinuity. *Mathematics of Operations Research* (published online August) <https://doi.org/10.1287/moor.2023.0295>

(with S. Han and X. Zhang) On the number of pivots of Dantzig's Simplex methods for linear and convex quadratic programs. *Operations Research Letters* 53 (published online March) <https://doi.org/10.1016/j.orl.2024.107091>

(with M. Dessouky, W. Gu, and M. Zhang) A general coupled morning-evening traffic equilibrium model with rideshare, ride-hailing and public transit services. *Transportation Research, Part A* (published online June) <https://doi.org/10.1080/23249935.2024.2357160>

(with S. Han) Continuous selections of solutions to parametric variational inequalities. *SIAM Journal on Optimization* 34(1): 870–892 <https://epubs.siam.org/doi/10.1137/22M1514982>

(with Z. He, S. Han, A. Gómez, and Y. Cui) Comparing solution paths of sparse quadratic minimization with a Stieltjes matrix. *Mathematical Programming* 204: 517–566

2023

(with Y. Cui and J. Liu) The minimization of piecewise functions: Pseudo stationarity. *Journal of Convex Analysis* 30(3): 793–834

(with S. Han) Some strongly polynomially solvable convex quadratic programs with bounded variables. *SIAM Journal on Optimization* 33(2): <https://doi.org/10.1137/21M1463793>

(with A. Gomez and Z. He) Linear-step solvability of some folded concave and singly-parametric sparse optimization problems. *Mathematical Programming, Series B* 198(2): 1339–1380

2022

(with Q. Ba) Exact penalization of generalized Nash equilibrium problems. *Operations Research* 70(3): 1448–1464

(with Y. Cui and J. Liu) Solving nonsmooth nonconvex compound stochastic programs with applications to risk measure minimization. *Mathematics of Operations Research* 47(4): 3051–3083

(with Y. Cui and J. Liu) Nonconvex and nonsmooth approaches for affine chance constrained programs. *Journal of Set-Valued and Convex Analysis* 30: 1149–1211

(with S. Cao and X. Huo) A unifying framework of high-dimensional sparse estimation with difference-of-convex (DC) regularizations. *Statistical Sciences* 37(3): 411–424.

(with J. Liu) Risk-based robust statistical learning by stochastic difference-of-convex value-function optimization. *Operations Research* 71(2): 397–414

(with Y. Liu and Z. Qi) On robustness of individualized decision rules. *Journal of the American Statistical Association* 118(543): 2143–2157

(with Z. Qi, Y. Cui, and Y. Liu) Asymptotic analysis of stationary solutions of coupled nonconvex nonsmooth empirical risk minimization. *Mathematics of Operations Research* 47(3): 2034–2064

2021

(with Y. Cui and Z. He) Nonconvex robust programming via value-function optimization. *Computational Optimization and Applications* 78: 411–450

(with S. Wang, T.H. Chang, and Y. Cui) Clustering by orthogonal nonnegative matrix factorization: a sequential non-convex penalty approach. *IEEE Transactions on Signal Processing* 69: 5273–5288.

2020

(with Y. Cui and Z. He) Multi-composite nonconvex optimization for training deep neural networks. *SIAM Journal on Optimization* 30(2): 1693–1723

(with J. Lai, U. Shanbhag and S. Sen) On synchronous, asynchronous, and randomized best-response schemes for stochastic Nash games. *Mathematics of Operations Research* 41(1): 157–190

(with J. Liu, Y. Cui, and S. Sen) Two-stage stochastic programming with linearly bi-parameterized quadratic recourse. *SIAM Journal on Optimization* 30(3): 2530–2558

(with T.H. Chang, Y. Cui, and M. Hong) A study of piecewise-linear quadratic programs. *Journal of Optimization Theory and Applications* 186: 523–553

(with T. Hao) Piecewise affine parameterized value-function based non-cooperative games. *Mathematical Programming* 180: 33–73

(with F. Jara-Moroni, J.E. Mitchell, and A. Wächter). An enhanced logical Benders approach for solving linear programs with complementarity constraints. *Journal of Global Optimization* 77: 687–714

2019

(with J. Ban, M. Dessouky, and Rong Fan) A general equilibrium model for transportation systems with e-hailing services and flow congestion. *Transportation Research, Series B: Methodological* 129: 273–304

(with Y. Cui, Y. Liu, and Z. Qi) Estimation of individualized decision rules based on an optimized covariate-dependent equivalent of random outcomes. *SIAM Journal Optimization* 29(3): 2337–2362

(with B. Yu and J.E. Mitchell) Linear programs with complementarity constraints using branch-and-cut. *Mathematical Programming, Series C* 11: 267–310

2018

(with Y. Cui and B. Sen) Composite difference-max programs for some modern statistical estimation problems. *SIAM Journal on Optimization* 28(4): 3344–3374.

(with M. Feng, J.E. Mitchell, X. Shen, and A. Wächter) Complementarity formulations of ℓ_0 -norm optimization problems. *Pacific Journal of Optimization* 14(2): 273–305.

(with F. Jara-Moroni and A. Wächter) A study of the difference-of-convex approach for solving linear programs with complementarity constraints. *Mathematical Programming, Series B* 169(1):

221–254.

(with H. Dong and M. Ahn) Structural properties of affine sparsity constraints. *Mathematical Programming, Series B* 176(1–2): 95–135.

(with X.J. Ban and R. Ma) A link-based dynamic complementarity system formulation for continuous-time dynamic user equilibria with queue spillbacks. *Transportation Science* 52, 497–737.

(with M. Nouiehed and M. Razaviyayn) On the pervasiveness of difference-convexity in optimization and statistics. *Mathematical Programming, Series B* 174(1–2): 195–222.

(with T. Min) Decomposition methods for computing directional stationary solutions of a class of non-smooth non-convex optimization problems. *SIAM Journal on Optimization* 28(2): 1640–1669.

2017

(with M. Ahn and J. Xin) Difference-of-convex learning: directional stationarity, optimality, and sparsity. *SIAM Journal on Optimization* 27(3): 1637–1665.

(with A. Alvarado and M. Razaviyayn) Computing B-stationary points of nonsmooth dc programs. *Mathematics of Operations Research* 42, 95–118.

(with S. Sen and U. Shanbhag) Two-stage non-cooperative games with risk-averse players. *Mathematical Programming, Series B* 165(1): 235–290.

2016

(with L. Bai and J.E. Mitchell) On conic QPCCs, QCQPs and completely positive programs. *Mathematical Programming, Series A* 159(1): 109–136.

(with Y. Bai and Y. Ouyang) Enhanced models and improved solution for biofuel supply chain design under land use constraints. *European Journal of Operations Research* 249, 281–297

(with R.W. Cottle and I. Adler) Some LCPs solvable in strongly polynomial time with Lemke’s algorithm. *Mathematical Programming, Series A* 160(1): 477–493

(with B.F. Hobbs and D. Schiro) Perfectly competitive capacity expansion games with risk-averse participants. *Computational Optimization and Applications* 65(2): 511–539

2015

(with X.J. Ban, X. Liu, and R. Ma) Convergence of time discretization of continuous-time dynamic network loading models. *Networks and Spatial Economics* 15(3): 443–463.

(with M. Dessouky, F. Ordonez, and H. Xu) Complementarity models for traffic equilibrium with ridesharing. *Transportation Research, Part B: Methodological* 81(1): 161–182.

form

(with Y.C. Lee and C.L. Su) A constructive approach to the estimation of pure characteristics demand models with pricing. *Operations Research* 63(3): 639–659.

2014

(with A. Alvarado and G. Scutari) A new decomposition method for multiuser DC-programming and its application to physical layer security. *IEEE Transactions on Signal Processing* 62, 2984–2998.

(with L. Bai and J.E. Mitchell) Using quadratic convex reformulation to tighten the convex relaxation of a quadratic program with complementarity constraints. *Optimization Letters* 8, 811–822.

(with X.J. Ban and R. Ma) Continuous-time dynamic system optimum for single-destination traffic networks with queue spillbacks. *Transportation Research Part B: Methodological* 68, 98–122.

(with F. Facchinei and G. Scutari) Non-cooperative games with minmax objectives. *Computational Optimization and Applications* 59(1–2), 85–112.

(with F. Facchinei, G. Scutari, and L. Lampariello) VI-constrained hemivariational inequalities: distributed algorithms and power control in ad-hoc networks. *Mathematical Programming, Series A* 145, 59–96.

(with F. Facchinei, G. Scutari, D.P. Palomar, and P. Song) Decomposition by partial linearization: Parallel optimization of multiuser systems. *IEEE Transaction on Signal Processing* 62, 641–656. [Won the 2015 SPS Young Author Best Paper Award for Peiran Song].

(with F. Facchinei, D.P. Palomar, and G. Scutari) Real and complex monotone communication games. *IEEE Transactions on Information Theory* 60, 4197–4231.

(with J.E. Mitchell and B. Yu) Convex quadratic relaxations of nonconvex quadratically constrained quadratic programs. *Optimization Methods and Software* 29, 120–146.

2013

(with L. Bai and J.E. Mitchell) On convex quadratic programs with linear complementarity constraints. *Computational Optimization and Applications* 54, 517–544.

(with L. Feng, J. Nocedal, and D. Robinson) Subspace accelerated matrix splitting algorithms for symmetric and asymmetric linear complementarity problems. *SIAM Journal on Optimization* 23, 1371–1397.

(with X. Di, H.X. Liu, and X.J. Ban) Boundedly rational user equilibria (BRUE): Mathematical formulation and solution sets. *Procedia–Social and Behavioral Sciences* 80, pp. 231–248.

(with D.A. Schiro and U.V. Shanbhag) On the solution of affine generalized Nash equilibrium problems with shared constraints by Lemke’s method. *Mathematical Programming, Series A* 142(1–2), 1–46.

(with G. Scutari) Joint sensing and power allocation in nonconvex cognitive radio games: Nash equilibria and distributed algorithms. *IEEE Transactions on Information Theory* 59, 4626–4661.

(with G. Scutari) Joint sensing and power allocation in nonconvex cognitive radio games: Quasi-Nash equilibria. *IEEE Transactions on Signal Processing* 61, 2366–2382.

2012

(with Y. Bai and Y. Ouyang) Biofuel supply chain design under competitive agricultural land use and feedstock market equilibrium. *Energy Economics* 34, 1623–1633.

(with X.J. Ban, H.X. Liu, and R. Ma) Continuous-time point-queue models in dynamic network loading. *Transportation Research Part B: Methodological* 46, 360–380.

(with X.J. Ban, H.X. Liu, and R. Ma) Modeling and solving continuous-time instantaneous dynamic user equilibria: A differential complementarity systems approach. *Transportation Research Part B: Methodological* 46, 389–408.

(with L. Han, M.K. Camlibel, and W.P.M.H. Heemels) A unified numerical scheme for linear-quadratic optimal control problems with joint control and state constraints. *Optimization Methods and Software* 27, 761–799.

(with L. Han, G. Ramadurai, and S. Ukkusuri) A continuous-time dynamic equilibrium model for multi-user class single bottleneck traffic flows. *Mathematical Programming, Series A* 133, 437–460.

(with J. Hu and J.E. Mitchell) An LPCC approach to nonconvex quadratic programs. *Mathematical Programming, Series A* 133, 243–277.

(with J. Hu, J.E. Mitchell and B. Yu) On linear programs with linear complementarity constraints. *Journal of Global Optimization* 53, 29–51.

2011

(with M. Razaviyayn, Z.Q. Luo, and P. Tseng) A Stackelberg game approach to distributed spectrum management. *Mathematical programming* 129, 197–224.

(with G. Scutari) Nonconvex games with side constraints. *SIAM Journal on Optimization* 21(4), 1491–1522.

2010

Three modeling paradigms in mathematical programming. *Mathematical Programming, Series B*, 125, 297–323.

(with F. Facchinei, D.P. Palomar, and G. Scutari) Design of cognitive radio systems under temperature interference constraints: A variational inequality approach. *IEEE Transactions on Signal Processing* 58, 3251–3271.

(with F. Facchinei, D.P. Palomar, and G. Scutari) Convex optimization, game theory, and variational inequality in multiuser communication systems. *IEEE Signal Processing Magazine* 27, 35–49.

(with L. Han) Non-Zenoness of a class of differential quasi-variational inequalities. *Mathematical Programming, Series A* 121, 171–199.

(with L. Han and J. Shen) Switching and stability properties of conewise linear systems. *ESAIM: Control, Optimisation and Calculus of Variations* 16, 764–793.

(with B.F. Hobbs and J. Zhao) Long-run equilibrium modeling of alternative emissions allowance allocation systems in electric power markets. *Operations Research* 58, 529–548.

(with G. Ramadurai, S. Ukkusuri, and J. Zhao) Linear complementarity formulation for single bottleneck model with heterogeneous commuters. *Transportation Research, Series B* 44, 193–214.

2009

(with K. Camlibel, L. Han, and A. Tiwari) Convergence of time-stepping schemes for passive and extended linear complementarity systems. *SIAM Journal on Numerical Analysis* 47, 1974–1985.

(with P. Cheng, J. Fink, V. Kumar) Cooperative towing with multiple robots. *Journal of Mechanism and Robotics* 1, 011008 (8 pages).

(with F. Facchinei, D.P. Palomar, and G. Scutari) Flexible design of cognitive radio wireless systems: From game theory to variational inequality theory. *IEEE Signal Processing Magazine* 26, 107–123.

(with R.H. Gohary, Y. Huang, and Z.Q. Luo) A generalized iterative water-filling algorithm for distributed power control in the presence of a jammer. *IEEE Transactions on Signal Processing* 57, 2660–2674.

(with G. Gürkan) Approximations of Nash equilibria. *Mathematical Programming, Series B* 117, 223–253.

(with D.E. Stewart) Solution dependence on initial conditions in differential variational inequalities. *Mathematical Programming, Series B* 116, 429–460.

2008

Frictional contact models with local compliance: Semismooth formulation. *Zeitschrift für Angewandte Mathematik und Mechanik* 88, 454–471.

(with K. Bennett, J. Hu, and G. Kunapuli) Classification model selection via bilevel programming. *Optimization Methods and Software* 23, 475–489.

(with K. Bennett, J. Hu, and G. Kunapuli, and J.E. Mitchell) On the global solution of linear programs with linear complementarity constraints. *SIAM Journal on Optimization* 19, 445–471.

(with F. Facchinei, G. Scutari, and C. Wang) Distributed power allocation with rate constraints in Gaussian frequency-selective channels. *IEEE Transactions on Information Theory* 54, 3471–3489.

(with D.E. Stewart) Differential variational inequalities. *Mathematical Programming, Series A* 113, 345–424.

2007

Partially B-regular optimization and equilibrium problems. *Mathematics of Operations Research* 32, 687–699.

(with B.F. Hobbs) Nash-Cournot equilibria in electric power markets with piecewise linear demand functions and joint constraints. *Operations Research* 55, 113–127.

(with J. Shen), Strongly regular differential variational systems. *IEEE Transactions on Automatic Control* 52, 242–255.

(with J. Shen), Semicopositive linear complementarity systems. *International Journal on Robust and Nonlinear Control* 17, 1367–1386.

2006

(with K. Camlibel and J.L. Shen), Lyapunov stability of linear complementarity systems. *SIAM Journal on Optimization* 17, 1056–1101.

(with K. Çamlıbel and J.L. Shen), Conewise linear systems, Non-Zenoness and observability. *SIAM Journal on Control and Optimization* 45, 1769–1800.

(with Z.Q. Luo) Analysis of iterative waterfilling algorithm for multiuser power control in digital subscriber lines. *EURASIP Journal on Applied Signal Processing*, Article ID 24012. 10 pages.

(with J. Sun) Nash-Cournot equilibria with piecewise quadratic costs. *Pacific Journal of Optimization* 2, 679–692.

2005

(with M. Fukushima) Quasi-variational inequalities, generalized Nash equilibria, and multi-leader-follower games. *Computational Management Science* 1, 21–56, with erratum. [Awarded the 2005 Best Paper by the journal.]

(with J.E. Harrington, B.F. Hobbs, A. Liu, and G. Roch) Collusive game solutions via optimization. *Mathematical Programming, Series B* 104, 407–436. [Received the 2007 Best Publication Award corresponding to the Energy area of the Energy, Natural Resources and Environment Section within the Institute of Operations Research and Management Science.]

(with P. Song and V. Kumar) Convergence of time-stepping methods for initial and boundary value frictional compliant contact problems. *SIAM Journal on Numerical Analysis* 43, 2200–2226.

(with J. Shen) Linear Complementarity systems: Zero states. *SIAM Journal on Control and Optimization* 44, 1040–1066.

2004

(with B.F. Hobbs) Spatial oligopolistic equilibria with arbitrage, shared resources, and price function conjectures. *Mathematical Programming, Series B* 101, 57–94.

(with S. Leyffer) On the global minimization of the value-at-risk. *Optimization Methods and Software* 19, 611–631.

(with P. Song and V. Kumar) A semi-implicit time-stepping model for frictional compliant contact problems. *International Journal for Numerical Methods in Engineering* 60, 2231–2261.

(with T. Yu) Continuous M-estimators and their interpolation by polynomials. *SIAM Journal on Numerical Analysis* 42, 997–1017.

2003

(with B. Hobbs and C.B. Metzler) Nash-Cournot equilibria in power markets on a linearized DC network with arbitrage: formulations and properties. *Networks and Spatial Economics* 3, 123–150.

(with T. Olson and C. Priebe) A likelihood-MPEC approach to target classification. *Mathematical Programming* 96, 1–31.

(with D. Sun and J. Sun) Semismooth homeomorphisms and strong stability of semidefinite and Lorentz complementarity problems *Mathematics of Operations Research* 28, 39–63.

2002

(with C. Day and B. Hobbs) Oligopolistic competition in power markets: A conjectured supply function approach. *IEEE Transactions on Power Systems* 17, 597–607.

(with J. Tzitzouris) A time-stepping complementarity approach for frictionless systems of rigid bodies. *SIAM Journal on Optimization* 12, 834–860.

2001

(with F. Tin-Loi) A penalty interior point algorithm for a parameter identification problem in elastoplasticity. *Mechanics of Structures and Machines* 29, 87–101.

(with J.C. Trinkle and J. Tzitzouris) Dynamic multi-rigid-systems with concurrent distributed contacts. *Philosophical Transactions of the Royal Society London A: Mathematical, Physical and Engineering Sciences* 359, 2575–2593.

2000

(with B. Hobbs and C. Metzler) Strategic gaming analysis for electric power networks: An MPEC approach. *IEEE Transactions on Power Systems* 15, 638–645.

(with J. Huang) A mathematical programming with equilibrium constraints approach to inverse pricing of American options: the case of an implied volatility surface. *The Journal of Computational Finance* 4, 21–56.

(with J.C. Trinkle) Stability characterization of rigid body contact problems with Coulomb friction. *Zeitschrift für Angewandte Mathematik und Mechanik* 80, 643–663.

1999

(with D. Hilding and A. Klarbring) Minimization of maximum unilateral force. *Computer Methods in Applied Mechanics and Engineering* 177, 215–234.

(with R.D.C. Monteiro) A potential reduction Newton method for constrained equations. *SIAM Journal on Optimization* 9, 729–754.

(with D.E. Stewart) A unified approach to discrete frictional contact problems. *International Journal of Engineering Science* 37, 1747–1768.

1998

(with C.C. Chou and K.F. Ng) Minimizing and stationary sequences of optimization problems. *SIAM Journal on Control and Optimization* 36, 1908–1936.

(with P.W. Christensen, A. Klarbring and N. Strömberg) Formulation and comparison of algorithms for frictional contact problems. *International Journal for Numerical Methods in Engineering* 42, 145–173.

(with M. Fukushima) Some feasibility issues in mathematical programs with equilibrium constraints. *SIAM Journal of Optimization* 8, 673–681.

(with M. Fukushima) Complementarity constraint qualifications and simplified B-stationarity conditions for mathematical programs with equilibrium constraints. *Computational Optimization and Applications* 13, 111–136.

(with M. Fukushima and Z.Q. Luo), A globally convergent sequential quadratic programming algorithm for mathematical programs with equilibrium constraints. *Computational Optimization and Applications* 10, 5–34.

(with J. Huang) Option pricing and linear complementarity, *The Journal of Computational Finance* 2, 31–60.

(with A. Klarbring) Existence of solutions to discrete semicoercive frictional contact problems. *SIAM Journal on Optimization* 8, 414–442.

(with A. Klarbring) The steady sliding problem. *Zeitschrift für Angewandte Mathematik und Mechanik* 78, 1–16.

(with R.D.C. Monteiro) On two interior-point mappings for nonlinear semidefinite complementarity problems. *Mathematics of Operations Research* 23, 39–60.

1997

Error bounds in mathematical programming. *Mathematical Programming, Series B* 79, 299–332.

(with M. Ferris) Engineering and economic applications of complementarity problems. *SIAM Review* 39, 669–713.

(with O.L. Mangasarian) Exact penalty functions for mathematical programming with linear complementarity constraints. *Optimization* 42, 1–8.

(with J.C. Trinkle, S. Sudarsky, and G. Lo), On dynamic multi-rigid-body contact problems with Coulomb friction. *Zeitschrift für Angewandte Mathematik und Mechanik* 77, 267–279.

1996

(with M. Ferris) Nondegenerate solutions and related concepts in affine variational inequalities. *SIAM Journal on Control and Optimization* 34, 244–263.

(with Z.Q. Luo, D. Ralph, and S.Q. Wu) Mathematical programs with equilibrium constraints. *Mathematical Programming* 75, 19–76.

(with R.D.C. Monteiro) Properties of an interior-point mapping for nonlinear mixed complementarity problems. *Mathematics of Operations Research* 21, 629–654.

(with R.D.C. Monteiro and T. Wang) An interior point potential reduction method for constrained equations. *Mathematical Programming* 74, 159–196.

(with D. Ralph) Piecewise smoothness, local invertibility, and parametric analysis of normal maps. *Mathematics of Operations Research* 21, 401–426.

(with J.C. Trinkle) Complementarity formulations and existence of solutions of dynamic multi-rigid-body contact problems with Coulomb friction. *Mathematical Programming* 73, 199–226.

(with J.C. Trinkle and G. Lo) A complementarity approach to a quasistatic multi-rigid-body contact problem. *Computational Optimization and Applications* 5, 139–154.

1995

(with O.L. Mangasarian) The extended linear complementarity problem. *SIAM Journal on Matrix Analysis and Applications* 16, 359–368.

(with R.D.C. Monteiro and T. Wang) A positive algorithm for the nonlinear complementarity problem. *SIAM Journal on Optimization* 5, 129–148.

(with L. Qi) A globally convergent Newton method for convex SC^1 minimization problems. *Journal of Optimization Theory and Applications* 85, 633–648.

(with J.C. Yao) On a generalization of a normal map and equation. *SIAM Journal on Control and Optimization* 33, 168–184.

1994

Serial and parallel computation of Karush-Kuhn-Tucker points via nonsmooth equations. *SIAM Journal on Optimization* 4, 872–893.

(with M.S. Gowda) On the boundedness and stability of solutions to the affine variational inequality problem. *SIAM Journal on Control and Optimization* 32, 421–441.

(with M.S. Gowda) Stability analysis of variational inequalities and nonlinear complementarity problems, via the mixed linear complementarity problem and degree theory. *Mathematics of Operations Research* 19, 831–879.

(with Z.Q. Luo) Error bounds for analytic systems and their applications. *Mathematical Programming* 67, 1–28.

(with Tao Wang) Global error bounds for convex quadratic inequality systems. *Optimization* 31, 1–12.

1993

Convergence of splitting and Newton methods for complementarity problems: An application of some sensitivity results. *Mathematical Programming* 58, 149–160.

A degree-theoretic approach to parametric nonsmooth equations with multivalued perturbed solution sets. *Mathematical Programming, Series B* 62, 359–384.

(with S.A. Gabriel) NE/SQP: A robust algorithm for the nonlinear complementarity problem. *Mathematical Programming* 60, 295–338.

(with M.S. Gowda) The basic theorem of complementarity revisited. *Mathematical Programming* 58, 161–178.

(with L. Qi) Nonsmooth equations: Motivation and an algorithm. *SIAM Journal on Optimization* 3, 443–465.

(with F. Tin-Loi) Elastoplastic analysis of structures with nonlinear hardening: a nonlinear complementarity approach. *Computer Methods in Applied Mechanics and Engineering* 107, 299–312.

1992

(with S.A. Gabriel) An inexact NE/SQP method for solving the nonlinear complementarity problem. *Computational Optimization and Applications* 1, 67–92.

(with M.S. Gowda) On solution stability of the linear complementarity problem. *Mathematics of Operations Research* 17, 77–83.

(with M.S. Gowda) Some existence results for multivalued complementarity problems. *Mathematics of Operations Research* 17, 657–669.

(with S.P. Han and N. Rangaraj) Globally convergent Newton methods for nonsmooth equations. *Mathematics of Operations Research* 17, 586–607.

1991

Iterative descent algorithms for a row sufficient linear complementarity problem. *SIAM Journal on Matrix Analysis and Applications* 12, 611–624.

A B-differentiable equation based, globally and locally quadratically convergent algorithm for nonlinear programs, complementarity and variational inequality problems. *Mathematical Programming* 51, 101–131.

(with S.P. Han and N. Rangaraj) Minimization of locally Lipschitzian functions. *SIAM Journal on Optimization* 1, 57–82.

1990

Newton's method for B-differentiable equations. *Mathematics of Operations Research* 15, 311–341.

Solution differentiability and continuation of Newton's method for variational inequality problems over polyhedral sets. *Journal of Optimization Theory and Applications* 66, 121–135.

(with P.T. Harker) Finite-dimensional variational inequality and nonlinear complementarity problems: A survey of theory, algorithms and applications. *Mathematical Programming, Series B* 48, 161–220.

(with R. Mathias) Error bounds for the linear complementarity problem with a P-matrix. *Linear Algebra and its Applications* 132, 123–136.

1989

(with R.W. Cottle and V. Venkateswaran) Sufficient matrices and the linear complementarity problem. *Linear Algebra and its Applications* 114/115, 231–249.

(with C.S. Yu) A min-max resource allocation problem with substitution. *European Journal of Operations Research* 41, 218–223.

1988

Two characterization theorems in complementarity theory. *Operations Research Letters* 7, 27–31.

(with P.T. Harker) On the existence of optimal solutions to mathematical programs with equilibrium constraints. *Operations Research Letters* 7, 61–64.

(with J.M. Yang) Two-stage parallel iterative methods for the symmetric linear complementarity problem. *Annals of Operations Research* 14, 61–75.

(with J.M. Yang) Parallel Newton methods for the nonlinear complementarity problem. *Mathematical Programming, Series B* 42, 407–420.

1987

A posteriori error bounds for the linearly-constrained variational inequality problem. *Mathematics of Operations Research* 12, 474–484.

(with R. Chandrasekaran and R.E. Stone) Two counterexamples on the polynomial solvability of the linear complementarity problem. *Mathematical Programming* 39, 21–26.

(with Y.Y. Lin) Iterative methods of large convex quadratic programs: A survey. *SIAM Journal on Control and Optimization* 25, 383–411.

1986

More results on the convergence of iterative methods for the symmetric linear complementarity problems. *Journal of Optimization Theory and Applications* 49, 107–134.

Inexact Newton methods for the nonlinear complementarity problem. *Mathematical Programming* 36, 54–71.

1985

Asymmetric variational inequality problems over product sets: Applications and iterative methods. *Mathematical Programming* 31, 206–219.

(with R. Chandrasekaran) Linear complementarity problems solvable by a polynomially bounded pivoting algorithm. *Mathematical Programming Study* 25, 13–27.

1984

Solution of the general multi-commodity spatial equilibrium problem by variational and complementarity methods. *Journal of Regional Science* 24, 403–414.

Necessary and sufficient conditions for the convergence of iterative methods for the linear complementarity problem. *Journal of Optimization Theory and Applications* 42, 1–17.

(with C.S. Yu) A special spatial equilibrium problem. *Networks* 14, 75–81.

(with C.S. Yu) Linearized simplicial decomposition methods for computing traffic equilibria on networks. *Networks* 14, 427–438.

1983

Methods for quadratic programming: A survey. *Computers and Chemical Engineering* 7, 583–594.

1982

On the convergence of a basic iterative method for the implicit complementarity problem. *Journal of Optimization Theory and Applications* 37, 149–162.

(with D. Chan) Iterative methods for variational and complementarity problems. *Mathematical Programming* 24, 284–313.

(with D. Chan) The generalized quasi-variational inequality. *Mathematics of Operations Research* 7, 211–224.

(with R. W. Cottle) On the convergence of a block successive overrelaxation method for a class of linear complementarity problems. *Mathematical Programming Study* 17, 126–138.

1981

A column generation technique for the computation of stationary points. *Mathematics of Operations Research* 6, 213–224

A unification of two classes of Q-matrices. *Mathematical Programming* 20, 348–352

A hybrid method for the solution of some multi-commodity spatial equilibrium problems. *Management Science* 27, 1142–1157.

An equivalence between two algorithms for quadratic programming. *Mathematical Programming* 20, 152–165.

(with P. S. C. Lee) A parametric linear complementarity technique for the computation of equilibrium prices in a single commodity spatial model. *Mathematical Programming* 20, 81–102.

1980

A new and efficient algorithm for a class of portfolio selection problems. *Operations Research* 28, 754–767.

A parametric linear complementarity technique for optimal portfolio selection with a risk-free asset. *Operations Research* 28, 927–941.

(with I. Kaneko) Some n by dn linear complementarity problems. *Linear Algebra and Its Applications* 34, 297–319.

1979

On a class of least-element linear complementarity problems. *Mathematical Programming* 16, 111–126.

On Q-matrices. *Mathematical Programming* 17, 243–247.

Hidden Z-matrices with positive principal minors. *Linear Algebra and Its Applications* 23, 201–215.

A new characterization of H-matrices with positive diagonals. *Linear Algebra and Its Applications* 25, 163–167.

(with I. Kaneko and W. P. Hallman) On the solution of some (parametric) linear complementarity problems with application to portfolio selection, structural engineering and actuarial graduation. *Mathematical Programming* 16, 325–347.

1978

On cone orderings and the linear complementarity problem. *Linear Algebra and Its Applications* 22, 267–281.

(with R. W. Cottle) On solving linear complementarity problems as linear programs. *Mathematical Programming Study* 7, 88–107.

(with R. W. Cottle) A least-element theory of solving linear complementarity problems as linear programs. *Mathematics of Operations Research* 3, 155–170.

1977

A note on an open problem in linear complementarity. *Mathematical Programming* 13, 360–363.

Papers Under Review

(with Y. Fang and J. Liu) Treatment learning with Gini constraints by Heaviside composite optimization and a progressive method. *Computational Optimization and Applications* (originally submitted August 2024).

(with Z. He and J. Liu) Adaptive importance sampling based surrogation methods for Bayesian hierarchical models, via logarithmic integral optimization. *Mathematical Programming* (original submitted May 2023; revised June 2024).

(with S. Han and X. Zhang) Improving the solution of indefinite quadratic programs and linear programs with complementarity constraints by a progressive MIP method. *Mathematical Programming Computation* (originally submitted August 2024).

Refereed Contributions in Books and Conference Proceedings

Five lectures on differential variational inequalities. In F. Facchinei and J.S. Pang, editors. *Multi-Agent Optimization: Cetraro, Italy 2014*. Lecture Notes in Mathematics SubSeries: C.I.M.E. Foundation Subseries. Springer International Publishing AG, Cham (June 2018).

(with D. Schiro) On differential linear-quadratic Nash games with mixed state-control constraints. In B. Mordukhovich, S. Reich, and A.J. Zaslavski, editors. Proceedings of the IMU-AMS Special Session on Nonlinear Analysis and Optimization. *Contemporary Mathematics* Volume 659, American Mathematical Society (Providence 2016) pp. 221–242.

(with M. Razaviyayn) A unified distributed algorithm for non-cooperative games with non-convex and non-differentiable objectives. In S. Cui, A. Hero, Z.Q. Luo, and J.M.F. Moura, editors. *Big Data over Networks*. Cambridge University Press (Cambridge, England 2016) pp. 101–134.

(with J.E. Mitchell and B. Yu) Obtaining tighter relaxations of mathematical programs with complementarity constraints. In T. Terlaky and F. Curtis, editors. *Modeling and Optimization: Theory and Applications*. Springer Proceedings in Mathematics and Statistics (New York 2012) Volume 21, pp. 1–23.

(with F. Facchinei) Nash equilibria: The variational approach. In Y. Eldar and D. Palomar, editors, *Convex Optimization in Signal Processing and Communications*. Cambridge University Press (Cambridge 2009) pp. 443–493.

(with L. Han) Time-stepping methods for linear complementarity systems. In L. Ji, Y.S. Poon, L. Yang, and S.T. Yau, editors. *Proceedings of the International Conference of Chinese Mathematicians, Part 2*. American Mathematical Society, Volume 51 (2012) pp. 731–746.

(with G. Kunapuli, K. Bennett, and J. Hu) Bilevel model selection for support vector machines, *Centre de Recherches Mathématiques CRM Proceedings and Lecture Notes*. [P. Pardalos and P. Hansen, editors. *Data Mining and Mathematical Programming*] 45 (2008) pp. 129–158.

(with J. Shen) Linear complementarity systems with singleton properties: Non-Zenoness, *Proceedings of the 2007 American Control Conference, New York, July* pp. 2769–2774.

(with K. Bennett, X. Ji, J. Hu, and G. Kunapuli) Model selection via bilevel programming, *Proceedings of the International Joint Conference on Neural Networks (IJCNN'06) Vancouver, B.C. Canada, July 16–21, 2006* pp. 1922–1929.

(with P.W. Christensen) Frictional contact algorithms based on semismooth Newton methods, in *Reformulation–Nonsmooth, Piecewise Smooth, Semismooth and Smoothing Methods*, edited by M. Fukushima and L. Qi, Kluwer Academic Publishers (1999) pp. 81–116.

(with A.S. Lewis) Error bounds for convex inequality systems, in *Generalized Convexity, Generalized Monotonicity: Recent Results*, edited by J.P. Crouzeix, J.-E. Martinez-Legaz and M. Volle; Proceedings of the Fifth Symposium on Generalized Convexity, Luminy-Marseille, 1996; Kluwer Academic Publishers (1998) pp. 75–110.

(with Z.Q. Luo and D. Ralph) Piecewise sequential quadratic programming for mathematical programs with nonlinear complementarity constraints, in *Multilevel Optimization: Algorithms, Complexity and Applications*, edited by A. Migdalas, P.M. Pardalos and P. Våbrand; Proceedings of the Bilevel Programming Workshop, Storgården, Rimforså, Sweden 1995; Kluwer Academic Publishers (1998) pp. 209–230.

(with M. Fukushima) Minimizing and stationary sequences of merit functions for complementarity problems and variational inequalities, in *Variational and Complementarity Problems: State-of-the-Art*, edited by M.C. Ferris and J.S. Pang; Proceedings of the First International Conference on Complementarity Problems, 1995; SIAM Publications (1997) pp. 91–104.

Necessary and sufficient conditions for solution stability in parametric nonsmooth equations, in *Recent Advances in Nonsmooth Optimization*, edited by D.Z. Zhu, L. Qi, and R. Womersley, World Scientific Publishers (1995) pp. 260–287.

Complementarity Problems, in *Handbook of Global Optimization*, edited by R. Horst and P. Pardalos, Kluwer Academic Publishers, Dordrecht (1995) pp. 271–338.

(with S.A. Gabriel) A trust region method for constrained nonsmooth equations, in *Large-Scale Optimization: State of the Art*, edited by W.W. Hager, D.W. Hearn, and P.M. Pardalos; Proceedings of a conference on Large-Scale Optimization, 1993; Kluwer Academic Publishers, Norwell (1994) pp. 159–186.

(with P.T. Harker) A damped-Newton method for the linear complementarity problem, in *Computational Solution of Nonlinear Systems of Equations*, edited by E.L. Allgower and K. Georg; Proceedings of an AMS-SIAM Summer Seminar on Computational Solution of Nonlinear Systems of Equations, 1988; Lectures in Applied Mathematics, Volume 26, American Mathematical Society, Providence, Rhode Island (1990) pp. 265–284.

The implicit complementarity problem, in *Nonlinear Programming 4*, edited by O.L. Mangasarian,

R.R. Meyer and S.M. Robinson; Proceedings of the conference Nonlinear Programming 4, 1980; Academic Press, New York (1981) pp. 487–518.

Un-refereed Contributions in Conference Proceedings

(with G. Ramadurai, S. Ukkusuri, and J. Zhao) Dynamic equilibrium in multi-user class single bottleneck models: A complementarity formulation, *Proceedings of the 87th Transportation Research Board Meeting, Washington D.C., 2008*.

(with G. Kunapuli, K.P. Bennett, and J. Hu) Bilevel model selection for support vector machines, in Panos Pardalos and Pierre Hansen, editors, *Machine Learning and Mathematical Programming. CRM Proceedings and Lecture Notes, Volume 45*. American Mathematical Society (2007) pp. 129–158.

(with P. Song, V.J. Kumar, and J.C. Trinkle) A family of models for manipulation planning, *Proceedings of the 6th International Symposium on Assembly and Task Planning: From Nano to Macro Assembly and Manufacturing (ISATP 2005)*, (July 2005) pp. 236–241.

(with P. Song and V. Kumar) A two-point boundary-value approach for planning manipulation tasks, in S. Thrun, G. Sukhatme, and O. Brock, editors, *Robotics: Science and Systems*, The MIT Press (2005) pp. 121–129.

(with C.J. Day and B. Hobbs) Properties of oligopolistic market equilibria in linearized DC power networks with arbitrage and supply function conjectures, in E. Sachs, editor, *System Modeling and Optimization XX*, [Proceedings of the IFIP TC7 20th Conference on System Modeling and Optimization, July 23-27, Trier, Germany], Kluwer Academic Publishers (2003) pp. 113–130.

(with M. Fukushima) Convergence of a smoothing continuation method for mathematical programs with complementarity constraints, *Lecture Notes in Economics and Mathematical Systems* 477 (1999) 99–110

(with J. Huang) Pricing American options with transaction costs by complementarity methods, in M. Avellaneda, editor, *Quantitative Analysis in Financial Markets*, [Collected Papers of the New York University Mathematical Finance Seminar], Volume III, World Scientific Publishing Co., Inc. (2001) pp. 172–198

(with J.C. Trinkle) Dynamic multi-rigid-body systems with concurrent distributed contacts, *Proceedings of IEEE International Conference on Robotics and Automation* (1997) pp. 2276–2281.

(with Y.Y. Lin) A dual conjugate gradient algorithm for the single-commodity spatial price equilibrium problem, in *Spatial Price Equilibrium: Advances in Theory, Computation and Application*, edited by P.T. Harker [Lecture Notes in Economics and Mathematical Systems, No. 249] Springer Verlag, Berlin (1985) pp. 136–157

(with P. Song, J.C. Trinkle, and V. Kumar) Design of part feeding and assembly processes with dynamics. *Proceedings of the IEEE International Conference on Robotics and Automation, New Orleans, Louisiana, April 2004*, [Kayamora Best Automation Paper Award winner] Vol. 1 (2004) pp.39–44.

(with J.C. Trinkle and S. Berard) A time stepping scheme for quasistatic multibody systems. *Proceedings of the 6th IEEE International Symposium on Assembly and Task Planning: From*

Nano to Macro Assembly and Manufacturing (ISATP 2005) pp.174–181.

(with J.M. Yang) Computational experience with solving linear programs by iterative methods on Cray Supercomputers, in *Proceedings of the Third International Symposium Science and Engineering Applications on Cray Supercomputers*, Cray Research Inc., Minnesota (1987) 125–140

On discovering hidden Z-matrices, in *Constructive Approaches to Mathematical Models*, edited by C.V. Coffman and G.J. Fix; Proceedings of a conference in honor of R.J. Duffin, 1978; Academic Press, New York (1979) pp. 231–241.