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## 1. Education

- 1988: Ph.D. major in Engineering-Economic Systems and minor in Operations Research. Thesis Title: “Interior Algorithms for Linear, Quadratic and Linearly Constrained Convex Programming,” Stanford University, Stanford, California. Ph.D. Thesis Committee (in alphabetic order): Sam Chiu, George Dantzig, David Luenberger, Edison Tse (Advisor).
- 1987: Visiting Ph.D. Student of Michael Todd, School of Operations Research and Industrial Engineering, Cornell University, Ithaca, New York.
- 1983: M.S. in Engineering-Economic Systems, Stanford University.
- 1982: B.S. in Systems and Control, Huazhong University of Science and Technology (HUST), Wuhan, the People's Republic of China.

## 2. Professional Experience

- 2002---Present: K.T. Li Chair Professor of Engineering, and Director of the Industrial Affiliates Program of Department of Management Science and Engineering and, by courtesy, Electrical Engineering, Stanford University, Stanford. Areas: Mathematical Programming, Algorithm Design and Analysis, Network and Information System Applications.
- 12/07---: Honorary professor, The Hong Kong Polytechnic University.
- 04/06-07/06: Visiting Chair Professor, Tsinghua University, China.
- 01/98---04/02: Henry B. Tippie Research Professor, Department of Management Sciences and Applied Mathematical and Computational Sciences, University of Iowa, Iowa.
- 12/00---05/01: Visiting Professor, Department of Systems Engineering and Engineering Management, Chinese University of Hong Kong, Hong Kong.
- 09/98---11/98: Visiting Fellow, Mathematical Science Research Institute, UC Berkeley, California.
- 09/93---01/98: Professor, Department of Management Sciences, University of Iowa, Iowa.
- 08/93---12/93: Visiting Scientist, Department of Operations Research and Industrial Engineering, Cornell University, Ithaca, NY.
- 06/93---present: Adjunct Professor, Institute of Applied Mathematics, the Chinese Academy, Beijing, China.
- 06/93---present: Adjunct Professor, Department of Mathematics, Fudan University, Shanghai and Huazhong University of Science and Technology, Wuhan, China.
- 09/90---08/93: Associate Professor, Department of Management Sciences, University of Iowa, Iowa.
- 07/91---08/91: Visiting Scientist, Department of Mathematical and Computational Sciences, Rice University, Houston, TX.
- 09/88---08/90: Assistant Professor, Department of Management Sciences, University of Iowa, Iowa.
- 11/87---08/88: Research Scientist, Optimization Software Development, Integrated Systems Inc., Santa Clara, California.
- 09/86---06/87: Lecturer, Mathematical Programming and Systems Optimization, Department of Engineering-Economic Systems, Stanford University.
- 06/83---06/86: Research Assistant, Mathematical Programming, Decision Systems and Network Planning, Department of Engineering-Economic Systems, Stanford University.

### 3. Publications (singly authored if no author names shown)

#### 3.1 Refereed Journal Papers

[J190] “An Improved Analysis of LP-Based Control for Revenue Management,” (Guanting Chen, Xiaocheng Li, Yinyu Ye), *Operations Research (Online)*, 2022, pp 1-15.

[J189] “Optimization and Operations Research in Mitigation of a Pandemic,” (Cai-Hua Chen, Yu-Hang Du, Dong-Dong Ge, Lin Lei, Yinyu Ye), *Journal of the Operations Research Society of China*, 2022, pp1-18.

[J188] “Managing randomization in the multi-block alternating direction method of multipliers for quadratic optimization,” (Krešimir Mihić, Mingxi Zhu, Yinyu Ye), *Mathematical Programming Computation*, 13(2), 2021, pp339-413.

[J187] “On the behavior of Lagrange multipliers in convex and nonconvex infeasible interior point methods,” (Gabriel Haeser, Oliver Hinder, Yinyu Ye), *Mathematical Programming*, 186(1), 2021, pp257-288.

[J186] “An ADMM-based interior-point method for large-scale linear programming,” (Tianyi Lin, Shiqian Ma, Yinyu Ye, Shuzhong Zhang), *Optimization Methods and Software*, 36(2-3), 2021/5/4, pp389-424.

[J185] “Online linear programming: Dual convergence, new algorithms, and regret bounds,” (Xiaocheng Li and Ye), *Operations Research*, Published Online: 30 Nov 2021.

[J184] “Worst-case complexity of cyclic coordinate descent:  $O(n^2)$  gap with randomized version,” (Ruoyu Sun, Yinyu Ye), *Mathematical Programming*, 185(1), 2021, pp487-520.

[J183] “MULTILEVEL MONTE CARLO SAMPLING ON HETEROGENEOUS COMPUTER ARCHITECTURES,” (Christiane Adcock, Yinyu Ye, Lluís Jofre, Gianluca Iaccarino), *International Journal for Uncertainty Quantification* 10(6), pages 575-594 (2020).

[J182] “Managing randomization in the multi-block alternating direction method of multipliers for quadratic optimization,” (K Mihić, M Zhu, Y Ye), *Mathematical Programming Computation*, 1-75 (2020).

[J181] “An ADMM-based interior-point method for large-scale linear programming,” (Tianyi Lin, Shiqian Ma, Yinyu Ye, Shuzhong Zhang), *Optimization Methods and Software*, 1-36 (2020).

[J180] “Towards solving 2-TBSG efficiently,” (Z Jia, Z Wen, Y Ye), *Optimization Methods and Software* 35 (4), 706-721 (2020).

[J179] “On the complexity of an expanded Tarski's fixed point problem under the componentwise ordering,” (Chuangyin Dang, Yinyu Ye), *Theoretical Computer Science* 732 pp26-45 (2018).

[J178] “Approximation Hardness for A Class of Sparse Optimization Problems,” (Yichen Chen, Yinyu Ye, Mengdi Wang), *Journal of Machine Learning Research* 20 (2019) 1-27.

[J177] “On the behavior of Lagrange multipliers in convex and nonconvex infeasible interior point methods,” (Gabriel Haeser, Oliver Hinder and Yinyu Ye), *Math. Program*, 1-32 (2019/12/21).

[J176] “Exact semidefinite formulations for a class of (random and non-random) nonconvex quadratic programs,” (Samuel Burer and Yinyu Ye), *Math. Program*, 1-17 (2018/2/7).

- [J175] “Worst-case Complexity of Cyclic Coordinate Descent:  $\mathcal{O}(n^2)$  Gap with Randomized Version,” (R Sun, Y Ye), appeared in *Math Prog.* 2019.
- [J174] “On the Efficiency of Random Permutation for ADMM and Coordinate Descent,” (Sun, LUO and Ye), *Math. of OR online*, 2019.
- [J173] “Optimality condition and complexity analysis for linearly-constrained optimization without differentiability on the boundary,” (Haeser, G., Liu, H. & Ye, Y.) *Mathematical Programming* 178 (1), 263-299 (2018).
- [J172] “Sample Average Approximation with Sparsity-Inducing Penalty for High-Dimensional Stochastic Programming,” (Hongcheng Liu, Xue Wang, Tao Yao, Runze Li, Ye), *Mathematical programming* 178 (1), 69-108 (2019).
- [J171] “On Doubly Positive Semidefinite Programming Relaxations,” (Fu, Ge and Ye), *Journal of Computational Mathematics*, Vol.36, No.3, 391–403 (2018).
- [J170] “A computation study on an integrated alternating direction method of multipliers for large scale optimization,” (Masoud Zarepisheh, Lei Xing, Yinyu Ye), *Optimization Letters*, 12(1), 3-15 (2018).
- [J169] “Extended ADMM and BCD for nonseparable convex minimization models with quadratic coupling terms: convergence analysis and insights,” (C Chen, M Li, X Liu, Y Ye), *Mathematical Programming* 173 (1-2), 37-77 (2019)
- [J168] “Assessing the System Value of Optimal Load Shifting,” (James Merrick, Yinyu Ye, and Robert Entriken), *IEEE Transactions on Smart Grid* 9 (6), 5943-5952, 2018.
- [J167] “Folded Concave Penalized Sparse Linear Regression: Sparsity, Statistical Performance, and Algorithmic Theory for Local Solutions,” (Hongcheng Liu, Tao Yao, Runze Li, Ye), *Mathematical programming* 166 (1-2), 207-240, 2017
- [J166] “On a New SDP-SOCP Method for Acoustic Source Localization Problem,” (Mingjie Gao, Ka-Fai Cedric Yiu, Sven Nordholm, Yinyu Ye), *ACM Transactions on Sensor Networks (TOSN)* 12 (4) 2016/10/25, pp 36-
- [J165] “A Mathematical Formulation for Optimal Load Shifting of Electricity Demand for the Smart Grid,” (Hu, Skorupski, Entriken and Ye), *IEEE Transactions on Big Data*, 2016/12/15,
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- [J163] “Likelihood robust optimization for data-driven problems,” (Zizhuo Wang , Peter W. Glynn, Yinyu Ye) *Computational Management Science*, Online (September 2015) 1-21.
- [J162] “A fixed point iterative approach to integer programming and its distributed computation,” (Dang and Ye), *Fixed Point Theory and Applications*, 2015(1), 1-15.
- [J161] “The simplex method is strongly polynomial for deterministic Markov decision processes,” (Ian Post and Ye), *Math of Operations Research*, 40 (4) (2015) 859-868.
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- [J158] “Hidden-City Ticketing: the Cause and Impact,” (Wang and Ye), *Transportation Science*, 50(1) (2016) 288-305.
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- [J156] “Complexity Analysis of Interior Point Algorithms for Non-Lipschitz and Nonconvex Minimization,” (W. Bian, X. Chen, and Ye), *Math Programming*, 149 (2015) 301-327.
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- [J139] “Price of Correlations in Stochastic Optimization” (Agrawal, Ding, Sebari, and Ye), *Operations Research*, 60:1 (2012), 150-162.
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[C80] “DRSOM: A Dimension Reduced Second-Order Method,” (Chuwen Zhang; Jiang Bo; Chang He; Yuntian Jiang; Dongdong Ge and Y Ye), NeurIPS Workshop: Order up! The Benefits of Higher-Order Optimization in Machine Learning, Spotlight Presentation, 2022.

[C79] “The Symmetry between Arms and Knapsacks: A Primal-Dual Approach for Bandits with Knapsacks,” International Conference on Machine Learning, Long Presentation, 2021.

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[C77] “Solving discounted stochastic two-player games with near-optimal time and sample complexity,” (A Sidford, M Wang, L Yang, Y Ye), International Conference on Artificial Intelligence and Statistics, 2992-3002, 2020.

[C76] “Distributionally Robust Local Non-parametric Conditional Estimation,” (VA Nguyen, F Zhang, J Blanchet, E Delage, Y Ye), Advances in Neural Information Processing Systems 2020.

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### 3.4 Working Papers

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- [W19] “An Improved Analysis of LP-based Control for Revenue Management,” (G. Chen, X. Li and Ye), 2021, arXiv preprint arXiv:2101.11092.
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- [W16] “Sequential batch learning in finite-action linear contextual bandits,” (Y Han, Z Zhou, Z Zhou, J Blanchet, PW Glynn, Y Ye), arXiv preprint arXiv:2004.06321, 2020.
- [W15] “High-Dimensional Learning under Approximate Sparsity: A Unifying Framework for Nonsmooth Learning and Regularized Neural Networks,” (Hongcheng Liu, Yinyu Ye), arXiv preprint arXiv:1903.00616, 2019.
- [W14] “A Robust Approach for Renewable Energy Exchange with a Fleet of Plug-In Electric Vehicles,” (Nicole Taheri, Robert Entriken, and Yinyu Ye), Working Paper, October 2015.
- [W13] “Online Allocation Rules in Display Advertising,” (Shamsi, Holtan, Luenberger, Ye), Working Paper, June 2014.
- [W12] “Sparse Portfolio Selection via Quasi-Norm Regularization,” (Caihua Chen, Xindan Li, Caleb Tolman, Suyang Wang, Yinyu Ye), Working Paper, December 2013.
- [W11] “Computational Models and Complexities of Tarski's Fixed Points,” (Dang, Qi and Ye), Working Paper, September, 2011
- [W10] “Existence of Positive Steady States for Mass Conserving and Mass-Action Chemical Reaction Networks with a Single Terminal-Linkage Class,” (Santiago Akle, Onkar Dalal, Ronan M. T. Fleming, Michael Saunders, Nicole Taheri, Yinyu Ye), May 2011.
- [W9] “NP-Hardness Results Related to PPAD” (Dang and Ye), Working Paper, January 2010.
- [W8] “Solving sparse semidefinite programs using the dual scaling algorithm with an iterative solver,” (Choi and Ye), Working Paper, Department of Management Sciences, University of Iowa, March 2000.
- [W7] “Computational Optimization Laboratory Positive Semidefinite Programming User Guide,” (Benson, Ye, and Zhang), Working Paper, Department of Management Sciences, University of Iowa, February 1999.
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[W1] “Further development of the interior algorithm for convex quadratic programming,” manuscript, Stanford University and Integrated Systems Inc., Stanford, 1987.

#### 4. Ph.D. Dissertation Advisees, Courses, Software, Invited Presentations and Patents

##### Ph.D. Dissertation Advisees

Name	Grad Date	University	Last Known Position
John Kaliski,	1992	U of Iowa	Anlon Systems Inc., Mankato, Minnesota
Ronald Bosch	1994 (Co-DA)	U of Iowa	Harvard University, Bio-statistics, School of Public Health
Pi-Fang Huang	1995	U of Iowa	Taiwan Dong-Hai University
Erling Andersen	1996 (Visiting)	U of Denmark	Founder of MOSEK.com, Optimization Software
Tienbin Qian	1997 (Co-DA)	U of Iowa	Motorola at Arizona, Operations Management Team
Steve Benson	1999	U of Iowa	Argonne National Lab at Chicago
Jiawei Zhang	2004	Stanford	NYU
Anthony So	2007	Stanford	Chinese University of Hong Kong
Pratik Biswas	2007	Stanford	Wall Street
Mark Peters	2008	Stanford	Private start-up company
Dongdong Ge	2009	Stanford	Shanghai JiaoTong University
John Carlsson	2009	Stanford	University of Minnesota
Erick Delage	2009	Stanford	HEC Montreal
Zhishu Zhu	2010	Stanford	Oracle Inc.
Shipra Agrawal	2011	Stanford	Microsoft Research
Zizhuo Wang	2012	Stanford	University of Minnesota
Qi Qi	2012	Stanford	Hong Kong U of Science and Tech.
Nicole Taheri	2012	Stanford	IBM Research
Robert Eberhart	2013 (Co-DA)	Stanford	University of Santa Clara
Onkar Danal	2013 (Co-DA)	Stanford	
Tiago Akle	2014* (Co-DA)	Stanford	Apple
Andy Nguyen	2014* (Co-DA)	Stanford	
Tailai Wen	2014	Stanford	
Ian Post	2015	Stanford	
Davood Shamsi	2016	Stanford	
Zhisu Zhu	2017	Stanford	
Ron Estrin	2018 (Co-DA)	Stanford	
Oliver Hinder	2019	Stanford	University of Pittsburgh
Xiaocheng Li	2020	Stanford	Empirical College of London

\* Expected

Courses listed on <http://www.stanford.edu/~yyye/course.html> .

Computer Software/Programs listed on <http://www.stanford.edu/~yyye/Col.html> .

Over 200 invited presentations

Patents through Stanford Technology License:

\* A Semi-Definite Programming Method for AD HOC Network Node Localization, 2005

\* Convex Parimutuel Call Auction Mechanism (S05-349), 2006

#### 5. Professional Affiliations and Activities

##### Membership

\* The Institute for Operations Research and the Management Sciences (INFORMS)

- \* Society for Industrial and Applied Mathematics (SIAM)
- \* Mathematical Optimization Society (MOS)

### Positions

- \* Co-organizer of the 2011 Fields Research Institute Thematic Program on Geometry and Optimization.
- \* Elected Vice Chair of the SIAM Activity Group on Optimization (SIAG/OPT), 2008-.
- \* Co-organizer of Workshop of Internet and Network Economics, 2005-.
- \* Section Officer (Linear Programming) of the Institute for Operations Research and the Management Sciences, (1997-2000).
- \* Co-organizer of the 1999 DIMACS Princeton workshop on discrete optimization.
- \* Member of the International Advisory Committee for the 15<sup>th</sup> and 16<sup>th</sup> International Symposium on Mathematical Programming (1992-1997).
- \* Topic Coordinator for the 15<sup>th</sup> International Symposium on Mathematical Programming (1992-1994).

### Special Presentations

- \* Invited Lecture at the 8th International Congress on Industrial and Applied Mathematics (ICIAM 2015), August 2015.
- \* Plenary Tseng Lectureship speaker at the 21<sup>th</sup> International Symposium on Mathematical Programming, Berlin, 2012
- \* Invited Presentations, IPAM workshops on the Simplex Method, Stochastic and Robust Optimization and Continuous Optimization, UCLA, October 2010 to January 2011.
- \* Semi-plenary speaker, The Chinese Mathematical Programming Society Annual Meeting, 2010
- \* Plenary speaker in Workshop on Internet and Network Economics, 2008
- \* Plenary speaker at the 19<sup>th</sup> International Symposium on Mathematical Programming, Rio de Janeiro, 2006
- \* Distinguished Speaker in High Performance Computation for Engineered Systems (HPCES), MIT, 2002.
- \* Semi-plenary speaker at the 17<sup>th</sup> International Symposium on Mathematical Programming, Atlanta, 2000.

### Journal Boards

- \* Area Editor of *Math Operations Res* (2010-), *Operations Research* (2005-2010), Chief Editor of *Optimization & Engineering* (2000-) and *Pacific Journal of Optimization* (2003-).
- \* Associate Editor of *Management Science* (2004-2009), *Math Operations Res* (1998-2001), *Optimization Methods and Software* (2003-), *SIAM Journal on Optimization* (1990-1997), *Journal of the Operations Research Society of Japan* (1998-), *Journal of Computational Mathematics* (2004-).

### Reviewers

- \* NSF proposal review panelist (1994, 1995, 1996, 2000, 2002, 2009, 2011).
- \* Referee for *Mathematics of Operations Research*, *Mathematical Programming*, *SIAM Journals*, *Operations Research*, *Linear Algebra and its Applications*, and *Journal of Optimization Theory and Applications*, etc.
- \* Reviewer for National Science Foundation; Natural Sciences and Engineering Research Council of Canada, Research Grant Council of Australia, Research Grant Council of Hong Kong, Sciences and Engineering Research Council of Chile.

## 6. Industrial and Consulting Activities

Chairman of the technical advisory board of MOSEK (2009-)

Director of the Industrial Affricate Program, Management Science and Engineering, Stanford (2002-2018)

Recipient of the 2010 and 2011 EPRI (Electric Power Research Institute) Gift

Recipient of the 2009 IBM Faculty Award

Sample of Industrial Projects and Activities:

JD.com (2015-)

49ers (2014-), Stadium Management

American on Line (AOL) (2013-), Data Analytics

Oracle (2013-), Meta-Heuristic Optimization

Boeing (2004-2013), Stochastic and Robust Decision Making and Optimization

Boeing (2004-2013), Dynamic Resource Allocation

American Express (2005-2008), Game and Dynamic Decision

Huawei Technologies Co., Ltd. (China) (2005-2010), Supply Chain Management and Facility Location

TISCO Inc. (China) (2006-2007), Supply Chain and Project Management  
Polaris Wireless Inc (2006-2007), Mobile Phone Localization  
AtRoad, Inc. Fremont (2006-2007), Vehicle Routing  
Barcelona Design Inc, (1998-2004), Analog Circuit Design  
AT&T (1992-1993), Linear Programming Solver Development  
MCI Telecommunication (1991-1992), Real Time Restoration for Telecommunication Network

## 7. Honors

### Yinyu Ye

- \* The 2015 IEEE SPS Signal Processing Magazine Best Paper Award for the paper "Semidefinite Relaxation of Quadratic Optimization Problems" by Zhi-Quan Luo, Wing-Kin Ma, Anthony Man-Cho So, Yinyu Ye, and Shuzhong Zhang.
- \* The winner of the 2014 SIAM Optimization Prize, awarded every three years to the author(s) of the most outstanding paper, as determined by the prize committee, on a topic in optimization published in English in a peer-reviewed journal.
- \* 2012 ISMP Tseng Lectureship Prize (Inaugural Recipient) for outstanding contributions in the area of continuous optimization, consisting of original theoretical results, innovative applications, or successful software development.
- \* 2009 INFORMS John von Neumann Theory Prize (Co-Recipient) for fundamental sustained contributions to theory in Operations Research and the Management Sciences
- \* 2007 Stanford Asian American Faculty of Year Award
- \* 2006 INFORMS Optimization Society Farkas Prize (Inaugural Recipient) for fundamental contributions to optimization
- \* 2006 INFORMS Fellow
- \* 2003 ISI Highly Cited Mathematical Researcher (one of 250 in Mathematical Sciences for 1983-2002, <http://www.ISIhighlycited.com>)
- \* 2004 BASES Innovators' Challenge First-Place Winners: Pratik Biswas and Yinyu Ye on sensor network localization.
- \* 2005 BASES Innovators' Challenge First-Place Winners: Holy Jin, Mike Carter, Mike Saunders and Yinyu Ye on sensor network management.
- \* Research Fellow, Mathematical Science Research Institute, UC Berkeley, 1998.
- \* Australian Research Council Fellowship, University of New South Wales, 1997.
- \* Japan Education Ministry Fellowship, Institute of Statistical Mathematics, 1996.
- \* Dutch Organization for Scientific Research (NWO) Fellowship, Delft University, 1994-1997.
- \* Obermann Fellowship, University of Iowa, 1994.
- \* Cornell University Theory Center Fellowship, 1993-1994.
- \* Fellowship Award of K. C. WONG Education Foundation, Hong Kong, 1993.

### Students Supervised by Yinyu Ye

- \* 2020 E. Delage, The College of New Scholars, Artists and Scientists, The Royal Society of Canada (RSC)
- \* 2015 Second Prize of INFORMS Nicholson Student Paper Competition, Ruoyu Sun, for the joint paper "On the Expected Convergence of Randomly Permuted ADMM."
- \* 2013 INFORMS Computing Society Prize, John Carlsson, for his best English language papers dealing with the Operations Research/Computer Science interface
- \* 2013 Second Prize of INFORMS Nicholson Student Paper Competition, Ian Post, for the joint paper "The simplex method is strongly polynomial for deterministic Markov decision processes."
- \* 2010 INFORMS Best Interactive Session Award, John Carlsson, for his paper "Dividing a territory between several facilities."
- \* 2010 INFORMS Optimization Prize for Young Researchers, Anthony Man-Cho So, for his paper "Moment inequalities for sums of random matrices and their applications to optimization."
- \* 2008 First Prize of INFORMS Nicholson Student Paper Competition, E. Delage, for the joint paper "Distributionally Robust Optimization under Moment Uncertainty with Application to Data-Driven Problems"

- \* 2004 INFORMS Optimization Prize for Young Researchers, Jiawei Zhang, for his paper “Approximating the Two-Level Facility Location Problem via a Quasi-Greedy Approach”

### 8. Funded Research

- \*China Electricity Power Research Institute (CEPRI), Power Dispatch Optimization, 2014-.
- \* Principal Investigator (1 of 2), Air Force Grant on Quadratic Mixed Integer Optimization, 2012-2015.
- \* Principal Investigator (1 of 1), the Precourt Energy Efficiency Center: “A Robust Mechanism to Dynamically Provide Grid Services with a Fleet of Plug-in Electric Vehicles,” 2012-2013.
- \* Principal Investigator (1 of 2), DOE Grant on Numerical Optimization Algorithms and Software for Systems Biology, 2009-2012.
- \* Principal Investigator (1 of 3), Air Force Grant on Optimization Algorithms and Equilibrium Analysis for Dynamic Resource Allocation, 2009-2012.
- \* Principal Investigator, NSF GOALI on Region Partitioning, 2008-2011.
- \* Principal Investigator, NSF Grant on Complexity of Market Equilibrium, 2006-2010.
- \* Principal Investigator, NSF Grant for Markov Decision Problem and Linear Programming, 2003-2006.
- \* Principal Investigator, NSF Grant for Semidefinite Programming and Approximation Algorithms, 1999-2003.
- \* Principal Organizer (1 of 2), Semidefinite Programming and Large-Scale Discrete Optimization Workshop, DIMACS and Princeton University, 1999.
- \* Co-Principal Investigator (1 of 5), NSF Grant for Computational Infrastructure and Equipment, 1998-1999.
- \* Co-Principal Investigator (1 of 4), NSF Grant for Hybrid Optimization for Protein Structure, 1998-1999.
- \* Co-Principal Investigator (1 of 4), University of Iowa Biosciences Initiative Pilot Grant, 1998.
- \* Principal Investigator, NSF Grant for computational complexity, 1997-2000.
- \* Principal Investigator, NSF Grant for mathematical programming, 1995-1998.
- \* Principal Investigator, NSF Grant for linear programming interior-point algorithms, 1993-1995.
- \* Principal Investigator, NSF Grant for linear programming, 1990-1992.
- \* Principal Investigator, College Summer Grants, College of Business of Administration, University of Iowa, 1989-1997.
- \* Principal Investigator (1 of 2), Center for Advanced Studies Interdisciplinary Research Grant, University of Iowa, 1991-1992.

