David D. Yao

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Department of Industrial Engineering and Operations Research
302 Mudd Building, Columbia University, New York, NY 10027-6699
Tel: 212-854-2934; Fax: 212-854-8103; E-mail: yao@columbia.edu
URL: http://www.columbia.edu/∼yao

Education

Ph.D. (Industrial Engineering and Operations Research), University of Toronto, 1983.
M.A.Sc. (Industrial Engineering and Operations Research), University of Toronto, 1981.

Academic Appointments

- *Columbia University:*
  Piyasombatkul Family Professor of Industrial Engineering and Operations Research, 2012- ;
  Thomas Alva Edison Professor of Industrial Engineering and Operations Research, 1992-98;
  Professor of Industrial Engineering and Operations Research, 1988–2012.
  Assistant Professor of Industrial Engineering and Operations Research, 1983-86.
- *Harvard University:* Associate Professor of Systems Engineering, 1986-88.

Honors and Awards

- Member, National Academy of Engineering, 2015.
- Markov Lecture, INFORMS Applied Probability Society, 2015.
- Great Teacher Award, Society of Columbia Graduates, 2012.
- Honorary Professor, Xi'an Jiao Tong University, China, 2010.
- Distinguished Faculty Teaching Award, Columbia Engineering Alumni Association, 2009.
- IBM Faculty Award, IBM Corporation, 2005.
- Fellow, Institute for Operations Research and the Management Sciences, 2005.
- SIAM Outstanding Paper Prize, Society for Industrial and Applied Mathematics, 2003.
- Franz Edelman Award (first prize), Institute for Operations Research and Management Sciences, 1999.
- Outstanding Technical Achievement Award, IBM Research, 1999.
- Fellow, Institute of Electrical and Electronics Engineers, 1997.
- IBM Research Division Award, 1996.
- Invention Achievement Award, IBM Research, 1992, 1996, 1997, 1999, 2000, 2005, 2009.

- Guggenheim Fellow, John Simon Guggenheim Foundation, 1991/92.
- Presidential Young Investigator, National Science Foundation, 1987-92.
- George E. Nicholson, Jr. Memorial Award

  1st prize; Operations Research Society of America, 1983.
- Ontario Graduate Scholarship, 1982/83;

  University of Toronto Open Doctoral Fellowship, 1981/82;

  University of Toronto Open Masters Fellowship, 1980/81.

Research Grants

As Principal Investigator/Project Director:

- NSF-CMMI-1462495, "A Dynamic Model for Systemic Risk in Networks Subject to Contagion" ($302,875 for three years, starting July 1, 2015).
- NSF-CMMI-0969328, "Dynamic Scheduling and Resource Control in Stochastic Processing Networks: Beyond Priority Rules," ($325,000 for three years, starting June 1, 2010).
- NSF-CNS-0325495, "P2P Network Theory," ($982,292 for five years, starting September 15, 2003; with Dan Rubenstein).
- NSF-DMI-0085124, "Multi-Product Assemble-to-Order Systems: Performance Analysis and Supply Chain Optimization," ($220,000 for three years, starting October 1, 2000).
- NSF-ECS-9705392, "Dynamic Scheduling and Resource Management of Parallel Processors," ($180,000 for three years, starting October 1, 1997).
- NSF-DMS-9631392, "Center for Applied Probability: Infrastructure Support for an Interdisciplinary Center" ($1,000,000 for five years, starting September 1, 1996; with Chris C. Heyde).
- NSF-DMI-9523029, "Process Control: Dynamics and Coordination" ($179,000 for three years, starting October 1, 1995).
- NSF-MSS-9216490, "Intelligent Control Initiative: Monotone Control of Discrete-Event Systems" ($200,000 for three years, starting September 1, 1992; with Paul Glasserman).
- NSF-DDM-9108540, "Stochastic Convexity in Queueing Networks and Its Applications, Phase II" ($120,000 for two years, starting September 1, 1991).
- NSF-ECS-8803183, "Stochastic Convexity in Queueing Networks and Its Applications" ($209,979 for three years, starting August 15, 1988).
- NSF-ECS-8658157, "Optimization and Control of Discrete-Event Stochastic Systems" ($62,500 per year plus industry matching funds for five years, starting October 1, 1987).
- NSF-DMC-8503986, "Research Initiation: Flexible Routing in Manufacturing Systems" ($59,694 for two years, starting August 1, 1985).

- Altair Engineering Inc., PG-008663, "Studies on Innovation Intelligence Quotient (IIQ) – A Data Analytic Approach" ($171,460 for one year, starting June 1, 2016).
- International Business Machines, Faculty Award, "Research in Stochastic Networks" ($30,000 for one year, starting September 1, 2005).
- Electric Power Research Institute, RP-8030-22, "Monotone Control of Discrete-Event Systems" ($100,000 for two years, starting September 1, 1994; with Paul Glasserman).
- International Business Machines, Agreement No. 15160046, "Analysis, Design and Control of Manufacturing Systems" ($121,705, February 1, 1990 - January 31, 1991).
- International Business Machines, Agreement No. 15160045, "Analysis, Design and Control of Manufacturing Systems" ($146,618, February 1, 1989 - January 31, 1990).
- International Business Machines, Manufacturing Research Fellowship ($28,000 awarded to doctoral student Rajesh Sah, 1994).
- Solar Instrument, Inc., Manufacturing Research Fellowship ($30,000 awarded to doctoral student Yindong Lu, 1994).
- AT&T Bell Laboratories ($25,000, 1987).
- Digital Equipment Corporation ($37,500, 1987).
- General Electric Corporation ($7,500, 1987).
- GTE Laboratories ($40,000, 1987-91).
- International Business Machines Corporation ($12,500, 1987/88).
- Xerox Corporation ($20,000, 1987/88).

- National Natural Science Foundation of China (NSFC), State Key Project Grant 71432004, "Healthcare Data Analytics and Optimal Decisions," (RMB 2,600,000 for five years, starting Jan 1, 2015).
- Hong Kong RGC Competitive Earmarked Research Grant CUHK4188/09, "Joint Replenishment and Re-distribution in Supply Networks: Structural Properties and Asymptotic Optimality," (HK$588,793 for three years, starting Oct 1, 2009).
- Hong Kong RGC Competitive Earmarked Research Grant CUHK4182/07, "Dynamic Resource Control: Limiting Regimes and Asymptotic Optimality," (HK$684,000 for three years, starting Oct 1, 2007; with Hengqing Ye).
- Hong Kong RGC Competitive Earmarked Research Grant CUHK4170/05E, "Stochastic Networks with Concurrent Resource Occupancy," (HK$538,836 for three years, starting Oct 1, 2005).
- Hong Kong RGC Competitive Earmarked Research Grant CUHK4173/03E, "Studies on Dynamic Pricing Models," (HK$377,149 for two years, starting September 1, 2003).

- Hong Kong RGC Competitive Earmarked Research Grant CUHK4175/00E, "Linear Quadratic Control via Semidefinite Programming, with Applications," (HK$635,817 for three years, starting October 1, 2000; with S. Zhang and X.Y. Zhou).
- Hong Kong RGC Competitive Earmarked Research Grant NSFC/CUHK10, "Supply Chain Structure and Information Dynamics," (HK$680,000 for three years, starting January 1, 2000; with H. Yan).
- Hong Kong RGC Competitive Earmarked Research Grant CUHK4376/99E, "Studies on Assemble-to-Order Systems," (HK$622,000 for three years, starting September 1, 1999).
- The Chinese University of Hong Kong, "Strategic Research in Risk and Optimization" (HK$800,000 for three years, starting January 1, 1999).
- Lee Charitable Foundation, Hong Kong, "R&D Center: Internet Business for Chinese Enterprises," (HK$6,000,000 for three years, starting January 1, 2001; with X.Q. Cai).

As Co-PI:

- AHRQ-R01-HS024915-01 "Nursing Intensity of Patient Care Needs and Rates of Healthcare-Associated Infections (NIC-HAI)" ($1,350,473 for three years, starting Sep 1, 2016; with Elaine Larson (PI) *et al*).
- DARPA-BAA-14-46 "A Bayesian Network Model of Financial, Social and News Streams Under Stress Conditions," ($450,000 for one year, starting Jan 15, 2015; with Tony Jebara (PI) and Kathleen McKeown).
- NSF Engineering Research Center in Telecommunications at Columbia University (1985-90).
- NSF Engineering Research Center in Systems at University of Maryland and Harvard University (1987-89).
- ONR-N00014-84-K-0465, Joint Services Electronics Program at Harvard University (1986-89).

- Hong Kong RGC Theme Based Research Scheme Grant T32-102/14N, "Delivering 21st Century Healthcare in Hong Kong — Building a Quality-and-Efficiency Driven System," (HK$20,450,000 for five years, starting December 1, 2014; with Frank Chen (PI) *et al*).
- Hong Kong RGC Competitive Earmarked Research Grant 16504914, "Managing Inventory Systems with Substitutable Products and Ordering Leadtimes," (HK$391,218 for two years, starting Aug 2014; with Shaohui Zheng).
- Hong Kong RGC Competitive Earmarked Research Grant CUHK411113, "Studies on Financial Systemic Risk – A Network-Based Approach," (HK$500,000 for three years, starting Jan 2014; with Nan Chen).
- Hong Kong RGC Competitive Earmarked Research Grant HKUST647611, "Managing Inventory Systems Under Supply Uncertainty" (HK$348,175 for two years, starting July 2011; with Shaohui Zheng).

- Hong Kong RGC Competitive Earmarked Research Grant HKUST6224/05E, "Managing Inventory Replenishment, Product Substitution, and Pricing in Supply Chain" (HK$538,836 for three years, starting September 2005; with Shaohui Zheng).
- Hong Kong RGC Competitive Earmarked Research Grant CUHK4242/04E, "Continuous Linear Programming - Computational and Control Perspectives" (HK$506,447 for three years, starting October 2004; with Shuzhong Zhang (PI) and Xunyu Zhou).
- Hong Kong RGC Competitive Earmarked Research Grant CUHK4234/01E, "Risk-Sensitive Control," (HK $762,762 for three years, starting December 1, 2001; with X.Y. Zhou).
- Hong Kong RGC Competitive Earmarked Research Grant HKUST6063/97E, "Studies on Networks of Inventory Queues," (HK$760,000 for two years, starting July 1, 1997; with L. Liu).

Patents

- "Job Configuration for Semiconductor Manufacturing," D.P. Connors and David D. Yao; U.S. Patent 5,341,302, August 23, 1994.
- "System and Method for Inspection of Products Supplied with Warranties," David D. Yao, Jinfa Chen and Shaohui Zheng; U.S. Patent 5,608,658, March 4, 1997.
- "A Method for Providing Inventory Optimization," Markus Ettl, Grace Lin, Gerald Feigin and David D. Yao; U.S. Patent 5,946,662, August 31, 1999.
- "A Method for Estimating Future Replenishment Requirements and Inventory Levels in Physical Distribution Networks," Gerald Feigin, K. Katircioglu and David D. Yao; U.S. Patent 6,006,196, December 21, 1999.
- "Large Inventory-Service Optimization in Configuration-to-Order Systems," F. Cheng, Markus Ettl, Grace Lin, and David D. Yao; U.S. Patent 6,970,841, November 29, 2005.
- "Large Inventory-Service Optimization in Configuration-to-Order Systems," F. Cheng, Markus Ettl, Grace Lin, and David D. Yao; U.S. Patent 7,496,530, Feb 24, 2009 (additional claims to U.S. patent 6,970,841).
- "Managing Fresh-Product Inventory," D.P. Connors, Markus Ettl, David D. Yao and Zhengliang Xue; U.S. Patent 8,364,553, Jan 29, 2013.
- "Joint Pricing and Replenishment of Freshness Inventory," D.P. Connors, Markus Ettl, David D. Yao and Zhengliang Xue; U.S. Patent 8,843,404, Sep 23, 2014.
- "Tracking a Financial Benchmark with a Few Assets," Yao, D.D., Zhang, S. and Zhou, X.; provisional patent filed February 19, 2004.

Editorial Boards

- Associate Editor, *Operations Research* (2012 -)

- Associate Editor, *Stochastic Systems* (INFORMS/APS Journal) (2009 -)
- Area Editor, *Operations Research* (1995 - 2006);
- Department Editor, *Discrete Event Dynamic Systems, Theory and Applications* (1991 - 2010); Advisory Board (2011 -);
- Associate Editor, *IEEE Transactions on Automatic Control* (1997 - 2000);
- Associate Editor, *Management Science* (1990 - 97);
- Associate Editor, *Operations Research Letters* (1989 - 2011);
- Associate Editor, *Probability in the Engineering and Informational Sciences* (1989 - 2010);
- Associate Editor, *Queueing Systems, Theory and Applications* (1989 - 2010);
- Associate Editor, *IIE Transactions* (1993 - 97);
- Associate Editor, *Naval Research Logistics* (1989 - 94);
- Associate Editor, *ORSA Journal on Computing* (1992 - 95).

Professional and Honor Society Membership

Institute of Electrical and Electronics Engineers (Fellow)
Institute for Operations Research and Management Sciences (Fellow)
Society for Industrial and Applied Mathematics
Omega Rho (Honor Society for Operations Research and Management Science)
Alpha Pi Mu (Honor Society for Industrial Engineering)

Biographical Reference Listings

Who's Who in America (since 1994)
American Men and Women of Science (since 1989)
Who's Who in Science and Engineering (since 1989)
Who's Who in American Education (since 1997)

Postdoctoral Fellows Supervised

Hong Chen (Ph.D., Stanford University, 1987), postdoctoral research in optimization and control in queueing networks, September 1987 - August 1988, at Harvard University.

Jixian Zhang (Ph.D., Georgia Tech., 1988), postdoctoral research in combinatorial and stochastic optimization, September 1988 - August 1989, at Harvard University.

Yongbo Xiao (Ph.D., Tsinghua, 2006), postdoctoral research on inventory control with transshipment, 2007, at Chinese University of Hong Kong.

Weifen Zhuang (Ph.D., Nanyang Technological University, 2009), postdoctoral research on Markov decision programming and related applications, 2009, at Chinese University of Hong Kong.

Babak Haji (Ph.D., Berkeley, 2015), postdoctoral research on healthcare operations – stochastic modeling and optimization, January - December, 2016, at Columbia University (joint supervision with Yuan Zhong).

Doctoral Dissertations Advised

S.C. Kim (Ph.D., Columbia University, 1985) "Loading, Assignment and Allocation Problems in a Class of Manufacturing Systems".

Gerald Feigin (Ph.D., Harvard University, 1990) "Comparison Methods for Scheduling Control of Multiclass Queues".

Dinah Cheng (Ph.D., Columbia University, 1990) "Tandem Queues with General Blocking: Stochastic Comparisons and Structural Properties".

Kenneth Budka (Ph.D. Harvard University, 1991) "Sample Path Analysis of Flow Control Schemes in Telecommunication Networks".

Bing Zhao (Ph.D., Columbia University, 1993) "Probabilistic Analysis of Some Combinatorial Optimization Problems".

Sanjay Mithal (Ph.D. Columbia University, 1994) "Limit Theorems for Networks of Finite Buffer Queues in Heavy Traffic."

Shaohui Zheng (Ph.D. Columbia University, 1994) "Dynamic Approaches to Some Quality Control Problems."

Youyi Feng (Ph.D., Columbia University, 1994; co-supervised with G. Gallego) "Optimal Pricing for Perishable Assets."

Guojian Li (Ph.D. Columbia University, 1995) "Applications of Stochastic Processes to Asset Planning."

Jinfa Chen (Ph.D. Columbia University, 1997) "Substitution and Inspection Models in Production-Inventory Systems."

Li Zhang (Ph.D. Columbia University, 1997) "Reliability and Dynamic Scheduling of Stochastic Networks."

Yingdong Lu (Ph.D. Columbia University, 1998) "Stochastic Scheduling of Multi-Class Networks with Side Constraints."

Xiaoming Liu (Ph.D. HK University of Science and Technology, 2000; co-supervised with Liming Liu)

Xiaoqing Wang (Ph.D. Chinese University of Hong Kong, 2007; co-supervised with Shuzhong Zhang)

Liao Wang (Ph.D. Columbia University, 2015) "Production Planning with Risk Hedging."

Elioth Sanabria (Ph.D. Columbia University, 2015 –)

Lisong Rong (Ph.D. Tsinghua University, China, 2013–; co-supervised with Jian Chen)

Ting Zhu (Ph.D. Sichuan University, China, 2013-18; co-supervised with Li Luo)

Doctoral Committees (partial list, with influence on the work)

Jianqiang Hu (Ph.D., Harvard University, 1990) "Strong Consistency in Infinitesimal Perturbation Analysis".

Michael Fu (Ph.D., Harvard University, 1989) "Stochastic Optimization Using Perturbation Analysis".

C.S. Chang (Ph.D., Columbia University, 1989) "Comparison Theorems for Queueing Systems and Their Applications to ISDN".

Pirooz Vakili (Ph.D., Harvard University, 1988) "Three Topics on Perturbation Analysis of Discrete-Event Dynamic Systems".

Paul Glasserman (Ph.D., Harvard University, 1988) "Equivalence Methods in the Perturbation Analysis of Queueing Networks".

Wei-Bo Gong (Ph.D., Harvard University, 1987) "Smoothed Perturbation Analysis".

Teaching

- *Columbia University:*

  Graduate Courses — Stochastic Modeling-II, Introduction to OR – Stochastic Models, Discrete Event Stochastic Systems, Queueing Networks, Queueing Theory, Advanced Stochastic Models, Analysis of Automated Manufacturing Systems, OR Method in Finance, Introduction to Financial Engineering, Financial Engineering II, Production and Inventory Control, Probability and Statistics, Elementary Stochastic Processes, Production Management.

  Undergraduate Courses — Probability, Production and Inventory Control, Production Scheduling, Facility Layout and Location.

- *Harvard University:*

  Graduate Courses — Discrete Event Stochastic Systems, Mathematical Programming.

- *Yale University:*

  Graduate Course — Structural Properties in Discrete-Event Stochastic Systems.

  Undergraduate Course — Probability and Stochastic Models.

- *Hong Kong University of Science and Technology:*

  Graduate Course — Financial Engineering.

- *Chinese University of Hong Kong:*

  Graduate Courses — Discrete-Event Systems, Advanced Stochastic Models, Models and Decisions with Financial Applications.

- *Tsinghua University:*

  Graduate Courses — Advanced Stochastic Models, Advanced OM Seminars.

- *Shanghai Advanced Institute of Finance:*

  Graduate Courses — Quantitative Analysis and Modeling, Financial Engineering.

Other Professional Activities

- Member, National Academies Panel on Review of the Engineering Laboratory at NIST (2017).
- Member, Board on Mathematical Sciences and Analytics (BMSA), National Academies of Science, Engineering and Medicine (2016-19).
- Chair, Financial and Business Analytics Center, Data Science Institute, Columbia University (2012-16); Co-Chair (2016 –).
- Co-founder and Co-Director, Center for the Management of Systemic Risk, Columbia School of Engineering and Applied Science (2012 –).
- Co-founder and Member of the Executive Committee, Center for Applied Probability, Columbia University (1990 -).
- Strategic Planning Committee, Columbia Engineering School (1993-94, 20012-13).
- Provost's Engineering Dean Search Committee; Columbia University (1995/96).
- Provost's Salary Equity Committee; Columbia University (1995-96).
- Led a committee to establish the MS degree program in Financial Engineering, IEOR Dept, Columbia University (1997-2000).
- Member of a committee to establish the MS degree program in Management Science and Engineering, in partnership with Columbia Business School, Columbia University (20012-13).

- Chair, External Review Committee, Faculty of Industrial Engineering and Management, Technion (2015).
- Advisory board member, Dept of Industrial Engineering, Tsinghua University (2010 -).
- Advisory board member, School of Business, National University of Singapore (2007-09).
- Founding Director, Center for Logistics and Supply Chain Optimization (formerly, Center for the Advancement of E-Commerce Technologies), Li&Fung Institute for Supply Chain Management, Chinese University of Hong Kong (1999 - 2010).
- Led a committee to establish an Executive MSc Program in Logistics and Supply Chain Management in Shenzhen in collaboration with Tsinghua University, Chinese University of Hong Kong (2005-06).

- Founding Director, MSc in E-Commerce Technologies Program, Chinese University of Hong Kong (2000 - 2006).
- Senior Fellow, Center for the Management of Operations and Logistics, University of Texas, Austin (1996 - 2000).

- Visiting Scientist/Consultant:

  IBM T.J. Watson Research Center (1990 - 2012);

  AT&T Bell Labs, ConAgra, Digital Equipment, GE, GTE, USWest, Xerox; 1986-2000.
- Member of the OR-Grand Challenges Task Force (2012-13) sponsored by NSF, with the charge to identify OR catalysts for *NAE Grand Challenges*.
- Chair, INFORMS Lanchester Prize Committee (2012; Member, 2011-12, 1992-93).
- Program Chair, INFORMS International Conference, Beijing, June 24-27, 2012.
- Chair, INFORMS Applied Probability Society Special Committee to establish the APS flagship journal, *Stochastic Systems*, in collaboration with the Institute for Mathematical Statistics (IMS), 2006/07.
- Chair, INFORMS John von Neumann Theory Prize Committee (2003). Member, INFORMS John von Neumann Theory Prize Committee (2001-03).
- Chairman Elect (1991/92), Chairman (1992/93), Past Chairman (1993/94), Applied Probability Society of INFORMS (formally ORSA Technical Section and TIMS College of Applied Probability).
- Council Member (1992 - 95) ORSA Technical Section of Telecommunications.
- Member, ORSA Lanchester Prize Committee (1992/93).
- Program Chair, NFORMS International Conference (June 24-27, 2012, Beijing).
- Program Chair and co-founder, Mostly OM annual research workshop, Tsinghua University (2010, 2011, 2012, 2013, 2014; Beijing).
- Program Chair, INFORMS Applied Probability Meeting (Beijing, June 2004).
- Program Chair, Second ORSA Telecommunications Conference (March 1992, Boca Raton, Florida).
- Referee for:

  Advances in Applied Probability, Annals of Operations Research, Applied Stochastic Models and Data Analysis, Discrete Event Dynamic Systems - Theory and Applications, European Journal of Operational Research, Information Sciences, Information Systems and Operational Research, IEEE Transactions on Automatic Control, IEEE Transactions on Communications, IEEE Transactions on Computer, IEEE Transactions on Robotics and Automation, IIE Transactions, International Journal of Production Research, Journal of Applied Probability, Journal of the Association of Computing Machinery, Journal of Distributed and Parallel

Computing, Journal of the Operational Research Society, Journal of Optimization - Theory and Applications, Journal of Robotic Systems, Large Scale Systems, Management Science, Material Flow, Mathematics of Operations Research, Naval Research Logistics Quarterly, Operations Research, Operations Research Letters, Opsearch, Performance Evaluation, Queueing Systems: Theory and Applications, Royal Statistical Society (UK), Scandanavian Journal of Statistics, SIAM Journal of Applied Mathematics, Systems and Control Letters, Transportation Science.

- Reviewer and Panelist for:

  National Research Council;

  National Science Foundation: Division of Electrical, Communications and Systems Engineering; Division of Networking and Communications; Division of Design, Manufacturing and Computer-Integrated Engineering; Division of Civil, Mechanical and Manufacturing Innovation; Program of Decision, Risk and Management Science; CAREER Award;

  Natural Sciences and Engineering Research Council of Canada;

  International Science Foundation;

  German-Israel Foundation;

  Research Grants Council of Hong Kong.

Publications

Books

- Yao, D.D. and Zheng, S., *Dynamic Control of Quality in Production-Inventory Systems: Coordination and Optimization,* Springer-Verlag, 2002.
- Chen, H. and Yao, D.D., *Fundamentals of Queueing Networks: Performance, Asymptotics and Optimization,* Springer-Verlag, Applications of Mathematics, **46**, 2001.
- Glasserman, P. and Yao, D.D., *Monotone Structure in Discrete-Event Systems,* Wiley Inter-Science, Series in Probability and Mathematical Statistics, 1994.

- Latouche, G., Ramaswami, V., Sethuraman, J., Sigman, K., Squillante, M. and Yao, D.D. (eds.), *Matrix-Analytic Methods in Stochastic Models,* Springer-Verlag, 2012.
- Shanthikumar, J.G., Yao, D.D. and Zijm, W.H.M. (eds.), *Stochastic Modeling and Optimization of Manufacturing Systems and Supply Chains,* Kluwer, International Series in Operations Research and Management Science, **63**, 2003.
- Yao, D.D., Zhang, H. and Zhou, X.Y. (eds.), *Stochastic Modeling and Optimization, with Applications in Queues, Finance, and Supply Chains,* Springer-Verlag, 2002.
- Song, J.S. and Yao, D.D. (eds.), *Supply Chain Structures: Coordination, Information and Optimization,* Kluwer, International Series in Operations Research and Management Science, **42**, 2001.
- Glasserman, P., Sigman, K. and Yao, D.D. (eds.), *Stochastic Networks: Stability and Rare Events,* Springer-Verlag, Lecture Notes in Statistics, **117**, 1996.
- Yao, D.D., *Stochastic Modeling and Analysis of Manufacturing Systems,* Springer-Verlag, New York, 1994.

Journal Papers *(Appeared and Accepted)*

1. Ye, H. and Yao, D.D., Justifying Diffusion Approximations for Stochastic Processing Networks under a Moment Condition. *Annals of Applied Probability*, **28** (2018), 3652-3697
2. Liao, W. and Yao, D.D., Production with Risk Hedging – Optimal Policy and Efficient Frontier. *Operations Research,* **65** (2017), 1095-1113.
3. Larson, E.L., B. Cohen, J. Liu, P. Zachariah, D.D. Yao, and J. Shen, Assessing Intensity of Nursing Care Needs Using Electronically Available Data, *Computers, Informatics, Nursing*, **35** (2017), 617-623.
4. Ye, H. and Yao, D.D., Diffusion Limit of Fair Resource Control — Stationarity and Interchange of Limits. *Mathematics of Operations Research,* **41** (2016), 1161-1207.

5. Chen, N., Liu, X. and Yao, D.D., An Optimization View of Financial Systemic Risk Modeling – Network Effect and Market Liquidity Effect. *Operations Research,* **64** (2016), 1089-1108.

6. Capponi, A., Chen, P.-C. and Yao, D.D., Liability Concentration and Losses in Financial Networks: Comparisons via Majorization *Operations Research,* **64** (2016), 1121-1134.

7. Xu, H., Yao, D.D. and Zheng, S., Optimal Policies for a Two-Product Inventory System under a Flexible Substitution Scheme. *Production and Operations Management,* **25** (2016), 1088-1105.

8. Yao, D.D., Zhou, S. and Zhuang, W., Joint Replenishment and Transshipment – Asymptotics and Bounds. *Production and Operations Management,* **25** (2016), 273-289.

9. Luo, L., D.D. Yao, X. Huang, Y. You, Y. Shi, J. Liu, R. Gong, Sequence-Dependent Anesthesia-Controlled Times: A Retrospective Study in an Ophthalmology Department of a Single-Site Hospital. *Anesthesia & Analgesia*, **119** (2014), 151-162.

10. Pang, G. and Yao, D.D., Heavy-Traffic Limits for a Many-Server Queueing Network with Switchover. *Advances in Applied Probability*, **45** (2013), 645-672.

11. Ye, H. and Yao, D.D., A Stochastic Network under Proportional Fair Resource Control - Diffusion Limit with Multiple Bottlenecks. *Operations Research,* **60** (2012) 716-738.

12. Cheng, F., Ettl, M., Lu, Y. and Yao, D.D., A Two-Stage Push-Pull Production Planning Model. *Production and Operations Management,* **21** (2012), 668-681.

13. Xu, H., Yao, D.D. and Zheng, S., Optimal Replenishment and Substitution of an Inventory System with Nonstattionary Batch Demand. *Production and Operations Management.* **20** (2011) 727-736.

14. Ye, H. and Yao, D.D., Utility-Maximizing Resource Control: Diffusion Limit and Asymptotic Optimality for a Two-Bottleneck Model. *Operations Research,* **58** (2010), 613-623.

15. Chen, H., Wu, O., and Yao, D.D., On the Benefit of Inventory-Based Dynamic Pricing Strategies. *Production and Operations Management,* **19** (2010), 249-260.

16. Wang, X.Q., Zhang, S.Z. and Yao, D.D., Separated Continuous Conic Programming: Strong Duality and an Approximation Algorithm. *SIAM Journal on Control and Optimization*, **48** (2009) 2118-2138.

17. Ye, H. and Yao, D.D., Heavy-Traffic Optimality of a Stochastic Network under Utility-Maximizing Resource Control. *Operations Research*, **56** (2008), 453-470.

18. Lin, G.Y., Lu, Y. and Yao, D.D., The Stochastic Knapsack Revisited: Switch-Over Policies and Dynamic Pricing. *Operations Research*. **56** (2008), 945-957.

19. Shanthikumar, J.G. and Yao, D.D., John A. Buzacott and His Pioneering Contributions to Manufacturing and Service Systems. *Production and Operations Management,* **16** (2007), 657-664.

20. Yao, D.D., Comments on: Dynamic Priority Allocation via Restless Bandit Marginal Productivity Indices. *TOP* (OR Journal of the Spanish Statistics and OR Society), **15** (2007), 220-223.

21. Yao, D.D., Zhang, S., and Zhou, X., Tracking a Financial Benchmark with a Few Assets. *Operations Research*, **54** (2006), 232-246.

22. Lu, Yingdong, J.S. Song and Yao, D.D., Backorder Minimization in Multiproduct Assemble-to-Order Systems. *IIE Transactions*, **37** (8) (2005), 763-774.

23. Yao, D.D., Zhang, S., and Zhou, X., Stochastic LQ Control via Primal-Dual Semidefinite Programming. *SIAM Review*, **46** (2004), 85-111 (an invited SIGEST paper).

24. Glasserman, P. and Yao, D.D. Optimal Coupling is Totally Positive and More. *Journal of Applied Probability*, **41A** (2004), 321-332.

25. Liu, L., Liu, X. and Yao, D.D., Analysis and Optimization of Multi-Stage Inventory-Queues. *Management Science*, **50** (2004), 365-380.

26. Lu, Y. and Yao, D.D., Optimal Control of a Fluid Network with Side Constraints. *IEEE Transactions on Automatic Control*, **48** (2003), 1865-1869.

27. Lu, Y., Song, J.S. and Yao, D.D., Order Fill Rate, Leadtime Variability, and Advance Demand Information in an Assemble-to-Order System. *Operations Research*, **51** (2003), 292-308.

28. Chen, H., Shen, X. and Yao, D.D., Brownian Approximations of Multiclass Open Queueing Networks. *Operations Research*, **50** (2002), 1032-1049.

29. Song, J.S. and Yao, D.D., Performance Analysis and Optimization of Assemble-to-Order Systems with Random Leadtimes. *Operations Research*, **50** (2002), 889-903.

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Papers under Review/Working Papers

Capponi, A., Sun, X. and Yao, D.D., A Dynamic Network Model of Interbank Lending — Systemic Risk and Liquidity Provisioning.

Chen, H., Wang, T. and Yao, D.D., Financial Network and Systemic Risk – A Dynamic Model.

Liao, W. and Yao, D.D., Production Planning with Shortfall Hedging, under Partial Information and Budget Constraint. (SSRN-id2877378, Dec 1, 2016)

Liao, W. and Yao, D.D., Mean-Variance Hedging for Production Planning with Multiple Products.

Liao, W. and Yao, D.D., Risk Hedging for Production Planning.

Ye, H. and Yao, D.D., Diffusion Approximation for Fair Resource Control — Interchange of Limits under a Moment Condition.

Yang, J., Ye, H. and Yao, D.D., On the Optimality of Reflection Control.

Lu, Y., Squillante, M. and Yao, D.D., Matching Supply and Demand in Production-Inventory Systems: Asymptotics and Optimization.

Li, X., Xu, S., Yao, D.D. and Zhang, H., Optimal Staffing for Ticket Queues.

Xue, Z., Ettl, M. and Yao, D.D., Managing Freshness Inventory — Optimal Policy, Bounds and Heuristics.

Presentations

- Over 150 presentations at conferences of professional societies, including:

  ORSA/TIMS/INFORMS Joint National Conference, INFORMS International Conference, ORSA /TIMS/INFORMS Applied Probability Conference, ORSA Conference on Telecommunications, ORSA/TIMS Special Interest Meeting on Flexible Manufacturing Systems, International Federation of Operational Research Societies (IFORS) Conference, World Congress on Nonlinear Analysis, IEEE Conference on Decision and Control, America Control Conference, IEEE Conference on Robotics and Automation, SIAM Conference on Optimization and Control, International Conference on Production Research, Allerton Conference on Communication, Control and Computing, Industrial Engineering Conference (Research Forum).

- Over 100 invited seminar talks at universities and research institutions, including:

  University of California - Berkeley (3), Boston University, Brown University, University of British Columbia, University of California-Irvine, University of Chicago, Columbia University, University of Connecticut, Cornell University, Dalhousie University, Dartmouth College, Duke University, Georgia Institute of Technology (3), Harvard University (3), University of Illinois Urbana-Champaign (3), University of Maryland, Massachusetts Institute of Technology (4),

University of Michigan (2), University of Minnesota, New York University, Northwestern University (2), University of Pennsylvania (4), Princeton University, Purdue University, Rensselaer Polytechnic Institute (2), University of Rochester, University of Southern California, Stanford University, Syracuse University, University of Toronto (2), University of Waterloo (2), Yale University (2);

ETH (Zurich), INSEAD, Catholic University of Leuven, Eindhoven University of Technology;

Institute of Mathematics and its Applications, Workshop on Discrete-Event Systems; AMS/SIAM Workshop on the Mathematics of Manufacturing Systems;

Chinese University of Hong Kong (2), Hong Kong University of Science and Technology (2), University of Hong Kong, National Tsing Hua University (2), National Taiwan University, Academia Sinica (Taiwan), Fu Dan University (Shanghai, China), Jiaotong University (Shanghai, China), Tsinghua University (8) (Beijing, China), National University of Singapore (6), Nanyang University of Technology, Singapore University of Technology and Design;

Bell Laboratories (5), Bell Communications Research, Digital Equipment Corporation (Artificial Intelligence Research Lab.), Electric Power Research Institute, GTE Laboratories (3), IBM T.J. Watson Research Center (Leaders in Mathematical Sciences, and 4 other presentations), Philips Laboratories, Xerox Corporation (Mechanical Engineering Science Lab.).