

VIJAY S. MOOKERJEE

Charles and Nancy Davidson Distinguished Professor of Information Systems

Information Systems and Operations Management
School of Management
University of Texas at Dallas

OFFICE

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EDUCATION

Ph.D. Management Information Systems, Krannert Graduate School of Management, Purdue University, December 1991
P.G.D.M. (Systems and Marketing) 1982-1984, Indian Institute of Management, Calcutta, India.
B.E. (Mechanical Engineering), 1978-1982, Nagpur University, India.

RESEARCH INTERESTS

Decision Support Systems, Expert Systems, Caching and Storage System Design, Designing Information Systems for use in E-commerce Operations, Content Distribution Economics, Content Distribution Technologies

TEACHING INTERESTS

- E-business Technologies
- Web-based Computing
- Master's level Core Information Systems Module
- Systems Analysis and Design
- Decision Support and Expert Systems
- Database Management

RESEARCH WORK

Journal Publications

32. "On Maximum Commonality Problems in Graphs," Forthcoming at *Management Science*, (with Milind Dawande, Subodha Kumar, and Chelliah Sriskandarajah)
31. "Application Development Using Modifiable Off-the-shelf Software: A Model and Extensions," Forthcoming at *Production and Operations Management*. (with Qi Feng and Suresh Sethi)
30. "Optimal Scheduling and Placement of Internet Banner Advertisements," Forthcoming at *IEEE Transactions on Knowledge and Data Engineering* (with Subodha Kumar and Milind Dawande)
29. "Pair Versus Solo Programming Under Different Objectives: An Analytical Approach," Forthcoming at *Information Systems Research* (with Milind Dawande, Monica Johar, and Subodha Kumar).
28. "Value-Driven Creation of Functionality in Software Projects: Optimal Sequencing and Reuse," *Production and Operations Management* Vol 16, No 3, 2007 (with Dengpan Liu, Milind Dawande)
27. "Document-Duplication Effects on Policies for Browser and Proxy Caching," *Inform's Journal on Computing* Vol 18, 2006. (with Yong Tan and Yonghua Ji)
26. "Optimal Policies for the Sizing and Timing of Software Maintenance Projects," *European Journal on Operations Research* Vol 173, No 3, 2006. (with Qi Feng and Suresh Sethi)
25. "An Economic Analysis of Interconnection Arrangements between Internet Backbone Providers," *Operations Research* Vol. 54, No 2, 2006. (with Yong Tan and Robert Chiang)
24. "Optimal Software Development: A Control Theoretic Approach," *Information Systems Research* Vol 16, 2005. (with Yonghua Ji and Suresh Sethi)
23. "Optimal Spending Allocation between Advertising and Information Technology in Electronic Retailing," *Management Science*, Vol 51, No 2, 2005. (with Yong Tan)
22. "Lying on the Web: Implications for Expert Systems Redesign," Vol 16, No. 2, *Information Systems Research*, June 2005. (with Zhengrui Jiang and Sumit Sarkar)
21. "Comparing Uniform and Flexible Policies for Software Maintenance and Replacement," *IEEE Transactions on Software Engineering* , Vol. 31, No. 3, March 2005, (with Yong Tan)
20. "Optimal Order Processing Policies for Electronic Commerce Servers," *Inform's Journal on Computing*, Vol. 17, No. 1, 2005, (with Yong Tan and Kamran Moinzadeh).
19. "Improving Software Team Productivity: A Quantitative Process Design Approach," *Communications of the ACM* , Vol. 47, No. 5., May 2004 (with Robert Chiang)
18. "A Fault Threshold Policy to Manage Software Development Projects," Vol. 15, No. 1, *Information Systems Research*, March 2004. (with Robert Chiang)
17. "A Dynamic Coordination Policy for Software System Construction," (with Robert Chiang) *IEEE Transactions on Software Engineering*, Vol. 28, No. 7, pp. 684-694, 2002.

16. "Policies for Data Archival in Hierarchical Storage Management," *European Journal on Operations Research*, Vol. 138, No. 2, pp. 413-435, 2002.
15. "Probability Bounds for Goal Directed Queries in Bayesian Networks," (with Michael Mannino), *IEEE Transactions on Knowledge and Data Engineering*, Vol. 14, No. 2, 2002.
14. "Analysis of a Least Recently Used Cache Management Policy for Web Browsers," (with Yong Tan), *Operations Research*, Vol. 50, pp. 345-357, 2002.
13. "Debiasing Training Data for Inductive Expert System Construction," Vol 13, No. 3, *IEEE Transactions on Knowledge and Data Engineering*, May-June 2001.
12. "Mean-Risk Tradeoffs in Value Based Inductive Expert Systems," (with Michael Mannino) Vol. 11, No. 2, *Information Systems Research*, June 2000.
11. "Redesigning Expert systems: Heuristics for Efficiently Generating Low Cost Information Acquisition Strategies," (with Michael Mannino) Vol. 11, No. 3, *INFORMS Journal on Computing*, Summer 1999.
10. "Redesigning Case Based Reasoning Algorithms to Reduce Information Acquisition Costs," *Information Systems Research*, Vol. 8 No. 1, March 1997, (with Michael Mannino).
9. "Sequential Decision Models for Expert System Optimization," Vol. 9, No. 5, *IEEE Transactions on Knowledge and Data Engineering*, September-October 1997. (with Michael Mannino)
8. "Purchasing Demand Information in a Stochastic-Demand Inventory System," *European Journal of Operations Research*, 102, pp. 36-57, September 1997. (with Greg DeCroix)
7. "The 'Learnmore' project: information acquisition solutions for the long-term care information system.," *Medinfo*, 8 Pt 1, 276-9, 1995. (with Meyer K;Dimond M;Shaver J;Canfield K;Mannino M;Mookerjee R;Abbott P)
6. "Improving the Performance Stability of Inductive Expert Systems Under Input Data Noise," *Information Systems Research*, Vol. 6, No. 4 pp. 328-356, 1995. (with Michael Mannino and Robert Gilson).
5. "Modeling Coordination in Software Construction: An Analytical Approach," *Information Systems Research*, Vol. 6, No. 3, pp. 220-254, 1995.(with Murlidhar Koushik).
4. "Inductive Expert System Design: Maximizing System Value," *Information Systems Research*, Vol. 4, No. 2, pp. 111-139, 1993. (with Brian Dos Santos)
3. "Expert System Design: Minimizing Information Acquisition Costs," *Decision Support Systems*, Vol. 9, pp. 161-181, 1993 (with Brian Dos Santos)
2. "A Blackboard Control Architecture for Model Sequencing and Selection," *European Journal of Information Systems* Vol. 2, No. 1, pp. 3-13, 1993 (with Alok Chaturvedi)
1. "A Conceptual Model for Optimizing the Cost of Knowledge Acquisition," *Information Services & Use*, Vol. 11, 1991, pp. 9-21 (with Brian Dos Santos and Gavriel Salvendy)

Refereed Conference Proceedings

1. "Expert System Design and Business Value," in the *1990 International Society for Decision Support Systems Conference*, pp. 511-520, Austin, 1990 (with Brian Dos Santos).

2. "Towards Optimal Expert System Design," *Proceedings of the 24th Hawaii International Conference on Systems Sciences*, January 1991 (with Brian Dos Santos). **Best paper nomination in the Knowledge Based Systems Track**
3. "An Economic Approach to Inductive Expert Systems Development," *Proceedings of the 25th Hawaii International Conference on Systems Sciences*, Jan. 1992, pp. 36-42. **Best paper nomination in the Knowledge Based Systems Track** (with Brian Dos Santos)
4. "Incorporating Information Acquisition Costs into Case Based Reasoning," *Workshop on Information Technologies and Systems*, (with Michael Mannino)
5. "Developing Inductive Expert Systems with Noisy Data: Economic and Information Theoretic Considerations," December 1993 *Workshop on Information Technologies and Systems*, (with Michael Mannino)
6. "Redesigning Expert Systems with Input Cost Dependencies and Varying Information Availability," *Workshop on Information Technologies and Systems*, December 1994, (with Michael Mannino, Radha Mookerjee and Kerry Myer).
7. "Reducing the Adverse Impact of Expert Bias in Inductive Expert Systems," *INFORMS College on Artificial Intelligence*, May 1996.
8. "Designing Inductive Expert Systems with Mean Variance Tradeoffs," *Workshop on Information Technologies and Systems*, December 1996, (with Michael Mannino).
9. "BANCORES: A System to Reduce the Cost of Operating a Bayesian Belief Network System," *INFORMS conference on Artificial Intelligence*, San Deigo, May 1997.
10. "Modeling Coordination in Software Construction Under Size and Learning Effects," *Workshop on Information Technologies and Systems*, December 1997. (with Robert Chiang). **Best Paper Award**
11. "Dynamic Versus Static Policies for Data Archival in Hierarchical Storage Management," *Workshop on Information Technologies and Systems*, December 1997.
12. "Generating Rules From Bayesian Belief Networks," *Workshop on Information Technologies and Systems*, December 1997, (with Mike Mannino and Robert Gilson).
13. "Managing Software Development Projects Using System Fault Data," (with Robert Chiang) *Workshop on Information Technologies and Systems*, December 1999. **Best paper nomination**
14. "Optimal Software Maintenance and Replacement Policies," (with Yong Tan) *Workshop on Information Technologies and Systems*, December 1999.
15. "Lying on the Web: Implications for Cost Effective Information Gathering," (with Sumit Sarkar) 11th *Workshop on Information Technologies and Systems*, December 2001. **Best paper nomination**
16. "Optimal Peering Strategies for Internet Service Providers," (with Yong Tan and Robert Chiang) 11th *Workshop on Information Technologies and Systems*, December 2001.
17. "Real Options and Software Upgrades: An Economic Analysis," (with Yonghus Ji and Suresh Radhakrishnan), *International Conference on Information Systems*, Barcelona, December 2002.
18. "Optimal Software Development and Debugging Policies: A Control Theoretic Approach," (with Yonghua Ji), *Workshop on Information Technologies and Systems*, Barcelona, December, 2002. **Best paper nomination**

19. "Revenue Maximization in Web Advertising," (with Subodha Kumar and Milind Dawande) *Workshop on Information Technologies and Systems* December, 2003, **Best paper nomination**
20. "Optimizing the Rotation of Developers in Extreme Programming: A Model and Comparison," *Workshop on Information Technologies and Systems*, December, 2003, (with Monica Johar, Subodha Kumar, and Milind Dawande) **Best paper nomination**
21. "A Value Based Approach to Plan the Release of Modules in a Software Construction Project," (with Milind Dawande and Rakesh Gupta), *Workshop on Information Technologies and Systems*, December, 2003.
22. "Optimal Software Demonstration Design," (with Deborah Manica and Suk Rhee), *Workshop on Information Technologies and Systems*, December, 2003.
23. "An Integrated Planning Model of System Development and Release," (with Yonghua Ji and Suresh Sethi), *Workshop on Information Technologies and Systems*, December, 2003. **Best paper nomination**
24. "An Economic and Operational Analysis of the Market for Content Distribution Services," (with Cuneyd Kaya and Kutsal Dogan) *International Conference on Information Systems*, Seattle, December 2003.
25. "Optimal Strategies for Cyber Insurance Claims: Conditions for a Viable Cyber Insurance Market," (with Tridib Bandyopadhyay) *Workshop on Information Technologies and Systems*, December, 2004.
26. An Economic and Operational Analysis of Sharing in P2P Networks (with Monica Johar and Syam Menon) *Workshop on Information Technologies and Systems*, December, 2004.
27. "Maintaining Diagnostic Knowledge-based Systems: A Control Theoretic Approach," with Wei Yue, Radha Mookerjee *Workshop on Information Technologies and Systems*, December, 2005. **Best paper award.**
28. "Designing Online Rule Based Systems Under Operational Constraints," (with Radha Mookerjee and Milind Dawande) *Workshop on Information Technologies and Systems*, December, 2005.
29. "A Model of Client-Developer Interaction in Extreme Programming," (with Subodha Kumar and Anjana Susarla) *Workshop on Information Technologies and Systems*, December, 2005.
30. "Scheduling Grid Computing to Maximize Business Value," (with Subodha Kumar and Koushik Dutta) *Workshop on Information Technologies and Systems*, December, 2005.

Papers Under Review

1. "Real Options and Software Upgrades: An Economic Analysis," Under Second Review *Management Science* (with Kutsal Dogan, Yonghua Ji and Suresh Radhakrishnan)
2. "Maintaining Diagnostic Knowledge-based Systems: A Control Theoretic Approach," with Wei Yue, Radha Mookerjee, and Alain Bensoussan, Under Third Review, *Management Science*.
3. "Scheduling Grid Computing to Maximize Business Value," Under Revision *European Journal on Operations Research* (with Subodha Kumar and Koushik Dutta).

4. “An Admission-Control Technique for Delay Reduction in Proxy Caching,” Under Review *Decision Support Systems* (with Cuneyd Kaya and Yong Tan)
5. “Analyzing Incentives for Sharing in P2P Networks when Distributing Delay-sensitive Content,” Under Review *Information Systems Research* (with Monica Johar and Syam Menon)
6. “Analyzing the Impact of Peer-to-Peer Networks on the Market for Content Provision and Distribution,” Under Review *Management Science*. (with Monica Johar and Nanda Kumar).
7. “Knowledge Sharing and Investment Decisions in Information Security,” (with Dengpan Liu and Yonghua Ji):Under Review *Information Systems Research*.

Work in Progress

1. “Techniques for Efficient Record Linkage in Heterogeneous Databases,” (with Deb Dey)
2. “When Hackers Talk: A Model of Security System Maintenance with Strategic Attackers and Information Dissemination,” (with Wei Yue, Radha Mookerjee, and Alain Bessoussain). Target: *Information Systems Research*.
3. The Design of an Optimal Software Demonstration,” (with Deborah Manica and Syam Menon): Target *Information Systems Research*.
4. “An Integrated Service Model for Customer Support,” (with Radha Mookerjee and Milind Dawande): Target *Information Systems Research*.
5. “Maintaining Knowledge Based Systems in the Presence of Drift and Sudden Shocks,” (with Wei Yue, Radha Mookerjee, and Alain Bessoussain). Target: *Operations Research*.
6. “A Competitive Analysis of Capacity Decisions at E-commerce Sites,” (with Dengpan Liu and Subodha Kumar): Target *Marketing Science*.
7. “Compensation for Developers in the Presence of Open Source Software,” (with Amit Mehra) : Target *Management Science*.
8. “Security-Performance Tradeoffs in Information Technology” (with Yonghua Ji, Dengpan Liu, and Radha Mookerjee) : Target *Management Science*.
9. “Optimal Strategies for Cyber Insurance Claims: Conditions for a Viable Cyber Insurance Market,” (with Tridib Bandyopadhyay): Target *JMIS*.
10. “Using Strategic Delay to Augment E-Commerce Profits,” (with Deborah Manica and Nanda Kumar)
11. “Optimal Local and Global Reuse: A Control Theoretic Approach,” (with Monica Johar and Suresh Sethi)
12. “A Sequential Decision Approach to the Design of a Web-Based Help-Desk,” (with Yong Tan).
13. “Optimal Wireless Caching Policies,” (with Yong Tan)
14. “Intra-firm Coordination in the Presence of Inter-firm Competition,” (with Yong Tan)

Honors

- David Ross Fellowship, 1990-1991, Purdue University.

- Research award of one month's salary from the School of Nursing, University of Washington, 1995. Project: "Reducing the Cost of Operating the Urological Nursing Information System"
- Best paper nomination in the Knowledge Based Systems Track, *Hawaii International Conference on Systems Sciences*, Jan. 1991.
- Best paper nomination in the Knowledge Based Systems Track, *Hawaii International Conference on Systems Sciences*, Jan. 1992.
- Co-Chair of Special Interest Group at INFORMS college on Artificial Intelligence: Economics of Knowledge Based Systems (since 1995)
- Best Paper Award in Workshop on Information Technology and Systems (WITS) Atlanta, December 1997.
- Program Committee for INFORMS Conference on Information technology and Systems, Montreal, April 1998.
- Program Committee Workshop on Information Technology and Systems, Helsinki December 1998.
- Program Committee Workshop on Information Technology and Systems (WITS), Charlotte December 1999.
- Program Committee International Conference on Information Systems (ICIS), Charlotte, December 1999.
- Co-Chair of the Workshop on Information Technologies and Systems (WITS), Brisbane, Australia, 2000.
- Phd Program mentor of the year award, University of Washington Business School, 2000.
- Program Committee Workshop on Information Technologies and Systems (WITS), New Orleans, December 2001.
- Program Committee Workshop on Information Technologies and Systems (WITS), Barcelona, December 2002.
- Program Committee Workshop on Information Technologies and Systems (WITS), Seattle, December 2003.
- Program Committee Workshop on Information Technologies and Systems (WITS), Washington DC, December 2004.
- Program Committee Workshop on Information Technologies and Systems (WITS), Las Vegas, December 2005.
- Program Committee Workshop on Information Technologies and Systems (WITS), Milwaukee, December 2006.
- Charles and Nancy Davidson Distinguished Professor, September 2007 – present.

Professional Work

Associate Editor

- *Decision Support Systems*
- *Management Science: Informations Systems Department*
- *Information Sytems Research*
- *INFORMS Journal on Computing: Telecommunications and E-Commerce Area*
- *Operations Research: Computing and Decision Technology Area [2001-2005]*
- *Information Technology and Management*
- *Journal of Data Management*

Review for

Management Science, European Journal on Operational Research, Information Systems Research, Decision Support Systems, IEEE Transactions on Knowledge and Data Engineering, and others

Doctoral Committees

Chairman

Robert L. Gilson	Industry
Robert Chiang	Accenture Consulting
Yong Tan	University of Washington
Yonghua Ji	University of Alberta
Cuneyd Kaya	Industry
Monica Johar	UNC Charlotte
Deborah Manica	USAA, San Antonio
Tridib Bandhyopadhyay	Keenasaw State University
Dengpan Liu	University of Alabama

Member

Yong Kim	Member Doctoral Thesis Committee
Weiyu Tsai	Member Doctoral Thesis Committee

Teaching Experience

UNIVERSITY OF POONA (1984-1988).

Systems Analysis and Design, Graduate Level.

NATIONAL INSTITUTE OF BANK MANAGEMENT (1986-1988).

Systems Analysis and Design, Graduate Level, Personal Computer Tools, Executive Education.

PURDUE UNIVERSITY (1989-1990)

Knowledge Management, Sophomore Level.

UNIVERSITY OF WASHINGTON

- Systems Development , Graduate Level, Undergraduate Level
- Information Systems, MBA Core IS Course

- Advanced Expert Systems
- Systems Development of Web-based Applications (New Course)
- Information Technologies for E-business (New Course)
- Doctoral Seminar in MIS Research

UNIVERSITY OF TEXAS AT DALLAS

- E-business Technologies
- MBA Core Class
- Phd Seminar in Information Systems
- Pricing and Distribution of Information Goods (Planned)

Work Experience

1984-1986. Position: SYSTEMS ANALYST. Walchand Industries, Pune, India.

1986-1988. Position: LECTURER. National Institute of Bank Management, Pune, India.

1984-1988. Position: VISITING FACULTY. University of Poona, Pune, India.

1991- 1997 Position: ASSISTANT PROFESSOR. Department of Management Science, University of Washington, Seattle.

1998-2001 Position: ASSOCIATE PROFESSOR. Department of Management Science, University of Washington, Seattle.

1999-2001 Position: Co-director of Program in Engineering and Manufacturing Management, University of Washington, Seattle.

2000-2001 Position: Co-faculty Director of E-business Program, University of Washington, Seattle.

2001-present Position: PROFESSOR. Information Systems and Operations Management, University of Texas at Dallas.

Jan 2002 – May 2007 Area Coordinator: Information Systems and Operations Mangement Area

September 2006 – present Charles and Nancy Davidson Distinguished Professor of Information Systems

PROFESSIONAL ASSOCIATIONS: MEMBER Informs