

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Yan Xiao, PhD	POSITION TITLE Associate Professor and Research Section Director		
eRA COMMONS USER NAME YANXIAO			
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
Lanzhou Jiaotong University, Lanzhou, China	BS	1982	Mechanical Engineering
Beijing Institute of Technology, Beijing, China	MS	1985	Systems Engineering
University of Toronto, Toronto, Canada	PhD	1994	Human Factors

A. Positions and Honors. List in chronological order previous positions, concluding with your present position. List any honors. Include present membership on any Federal Government public advisory committee.

Positions

1985 Systems Engineer, North Vehicle Research Institute, Beijing, China
 1991 Doctoral Fellow, IBM Canada Centre for Advanced Studies Toronto, Canada
 1994 Research Associate, Industrial Engineering, University of Toronto, Toronto, Canada
 1994 Instructor of Anesthesiology, Anesthesiology, University of Maryland School of Medicine
 1995 Assistant Professor of Anesthesiology, University of Maryland School of Medicine
 1994 Humans Factors Engineer, University of Maryland School of Medicine
 1997 Affiliate Assistant Professor of Information Systems, University of Maryland Baltimore County
 1998 Associate Member, Graduate School University of Maryland
 2000 Special Member, Graduate Faculty University of Maryland Smith School of Business
 2001 Associate Professor (with tenure), University of Maryland School of Medicine
 2005 Director, Research in Patient Safety, Program in Trauma, University of Maryland
 2006 Associate Director for Research, Center for Advancement in Patient Safety at University of Maryland
 2007 Affiliate Associate Professor of Information Systems, University of Maryland Baltimore County

Federal Government Public Advisory Committee Membership

National Science Foundation CISE Grants Review Panel (2000-3)
 National Science Foundation CISE Career Awards Review Panel (2002)
 NASA/SBIR Smart Medicine Systems Review Panel (2002-3)
 National Science Foundation CISE Ad Hoc Reviewer (2005)
 Swiss Federal Institute of Technology special external reviewer (2005)
 Ireland Health Research Board Special external reviewer (2005)
 Agency for Healthcare Research and Quality Special Emphasis Panel on Simulation (2006)

B. Selected peer-reviewed publications (in chronological order). Do not include publications submitted or in preparation.

Journal Articles

1. Mackenzie, C.F., Martin, P., **Xiao, Y.**, & The LOTAS Group. Video analysis of prolonged uncorrected esophageal intubation, *Anesthesiology*, 84(6):1394-1503. 1996.
2. **Xiao, Y.**, Hunter, W.A., Mackenzie, C.F., Jeffries, N.J., Horst, R., & LOTAS Group. Task complexity in emergency medical care and its implications for team coordination. *Human Factors*, 38(4):636-645. 1996.
3. **Xiao, Y.**, Milgram, P., & Doyle, D.J. Planning behavior and its functional roles in the interaction with complex systems. *IEEE Trans. Syst., Man, and Cyb., Part A: Systems and Humans*, 27(3):313-324. 1997.
4. **Xiao, Y.**, Mackenzie, C.F., Orasanu, J., Spencer, R., Rahman, A., Gunawardane, V., & The LOTAS Group. Information acquisition from audio-video-data sources: An experimental study on remote diagnosis. *Telemedicine J.*, 5(2):139-155. 1999.

5. **Xiao, Y.**, & Vicente, K. A framework for epistemological analysis in empirical (laboratory and field) studies. *Human Factors*, 42(1): 87-101. 1999.
6. LaMonte, M.P., **Xiao, Y.**, Mackenzie, C.F., Hu, P., Gaasch, W., Cullen, J., & Gagliano, D. Tele-BAT: Mobile telemedicine for the brain attack team. *J. Stroke & Cerebrovascular Diseases*, 9(3):May-June, 128-135, 2000
7. **Xiao, Y.**, Gagliano, D., LaMonte, M., Hu, P., Gaasch, W., Gunawardane, R., & Mackenzie, C.F. Design and evaluation of real-time mobile telemedicine system for ambulance transport. *J. High Speed Networks*, 9:47-56. 2000
8. Moss, J., **Xiao, Y.**, & Zubaidah, S. The operating room charge nurse: Coordinator and communicator. *J Am Med Inform Assoc*, 9(6 suppl):S70-S74, 2002
9. Mackenzie, C. F., Hu, P., **Xiao, Y.**, & Seagull, J.F. Video acquisition and audio system network (VAASNET) for analysis of workplace safety performance. *Biomed Instrument Techn.* 37(4): 285-291. 2003
10. Mackenzie, C.F., & **Xiao, Y.** Video techniques and data compared with observation in emergency trauma care. *Quality Safety Health Care*. 12:ii51-57. 2003.
11. **Xiao, Y.**, Seagull, F.J., Mackenzie, C.F., & Klein, K.K. Adaptive Leadership in Trauma Resuscitation Teams: A Grounded Theory Approach to Video Analysis. *Cogn Techn Work.* (6)158-164, 2004
12. Moss, J. & **Xiao, Y.** Improving Operating Room Coordination: Communication Pattern Assessment. *J. Nursing Administration*, 34(2):93-100, 2004
13. Dexter, F., Epstein, R.H., Traub, R.D., & **Xiao, Y.** Making Management Decisions on the Day of Surgery Based on Operating Room Efficiency and Patient Waiting Times. *Anesthesiology*, 101(6): 1444-1453, 2004
14. LaMonte M.P., **Xiao Y.**, Hu, P.F., Gagliano DM, Bahmouth, MN, Gunawardane RD, Mackenzie CF, Gaasch WR, & Cullen J. Shortening time to stroke treatment using ambulance telemedicine: TeleBAT. *J Stroke*. 13(4): 148-154. 2004
15. **Xiao, Y.**, Seagull, F.J., Nieves-Khouw, F., Barczak N., & Perkins, S. Organizational-Historical Analysis of the "Failure to Respond to Alarm" Problem. *IEEE Trans. on Syst., Man, and Cyb., Part A: Systems and Humans*, 34(6), 772-778. 2004
16. **Xiao, Y.** & Mackenzie, C.F. Introduction to the special issue on video-based research in high risk settings: methodology and experience. *Cognition, Technology & Work*, 6:127-130. 2004
17. Mackenzie, C.F., **Xiao, Y.**, & Horst, R.. Video task analysis in high performance teams. *Cog., Tech., and Work*. 6:139-147. 2004
18. Seagull, F.J., **Xiao, Y.**, & Plasters, C. Information Accuracy and Sampling Effort: A Field Study of Surgical Scheduling Coordination. *IEEE Trans. on Syst., Man, and Cyb., Part A: Syst Hum.* 24(6), 764-771. 2004
19. **Xiao Y.**, Hu, P, Hu H, Ho D, Dexter F, Mackenzie CF, Seagull FJ, Dutton D. Algorithm for Processing Vital Sign Monitoring Data to Remotely Identify Operating Room Occupancy in Real-Time. *Anesth Analg* 2005; 101(3):832-929.
20. **Xiao, Y.** Artifacts and Collaborative Work in Healthcare: methodological, theoretical, and technological implications of the tangible. *J. Biomedical Informatics*, 38(1):26-33. 2005.
21. Lu YC, **Xiao Y**#, Sears A, Jacko J. A Review and a Framework of Handheld Computer Adoption in Healthcare. *Int. J. Medical Informatics*. 74(5):709-722. 2005.
22. **Xiao Y.**, Kim YJ, Gardner SD, Faraj S, Mackenzie CF. Communication Technology in Trauma Centers: A National Survey. *J Emerg Med*. 30(1):21-18. 2006.
23. Seagull FJ, Mackenzie CF, **Xiao Y.**, Bochicchio GB. Video-based Ergonomic Analysis to Evaluate Toracostomy Tube Placement Techniques. *J Trauma*. 60(1):227-232. 2006
24. Gurses AP, **Xiao Y.** A systematic review of the literature on multidisciplinary rounds to design information technology. *J Am Med Inform Assoc* 2006; 13(3):267-276.
25. Guzzo, J.L., Seagull FJ, Bochicchio GV, Sisely A, Mackenzie CF, Dutton R, Scalea T, & **Xiao Y.** Multiple Operators During Central Line Placement in the Trauma Resuscitation Unit: Videotape Review of Maximum Barrier Precautions. *Surgical Infections* 2006; 7(1):15-20.
26. Hu P, **Xiao Y.**, Ho D, Mackenzie CF, Hu H, Voigt R, Martz D. Advanced Visualization Platform for Surgical Operating Room Coordination: Distributed Video Board System. *Surg Innov* 2006; 13(2):1-7
27. Faraj S, **Xiao Y.** Coordination In Fast-Response Organizations. *Management Science* 2006; 52(8):1155-1169.
28. **Xiao Y.**, Seagull FJ. Emergent CSCW Systems: The Resolution and Bandwidth of Workplaces. *Int J Med Inform* 2007; 76(S):261-266

29. Klein K, Ziegert J, Knight A, **Xiao Y**. Dynamic Delegation: Shared, Hierarchical, Deindividualized Leadership in Extreme Action Teams. *Admin Sci Quart* 2006; 51(4):590-621.
30. Miller A, **Xiao Y**. Multi-Level Strategies to Achieve Resilience for an Organization Operating at Capacity: A Case Study at a Trauma Centre. *Cogn Techn Work* 2007; 9(2):51-66.
31. **Xiao Y**, Schimpff S, Mackenzie CF, Merrell R, Entin E, Voigt R, Jarrell B. Video Technology to Advance Safety in the Operating Room and Perioperative Environment. *Surg Innov* 2007; 14(1): 52-61.
32. **Xiao Y**, Seagull FJ, Bochicchio GV, Guzzo JL, Dutton RP, Sisley A, Joshi M, Standiford HC, Hebden JN, Mackenzie CF, Scalea TM. Video-Based Training Increases Sterile-Technique Compliance During Central Venous Catheter Insertion. *Crit Care Med* 2007; 35(5):1302-1306.
33. Entin EB, Sidman J, Mizrahi G, Stewart B, Lai F, Neal L, Mackenzie C, **Xiao Y**. A web-based teamwork skills training program for emergency medical teams. *Stud Health Technol Inform*. 125:121-6. 2007.
34. Mackenzie CF, Hu PF, Fausboll C, Nerlich M, Benner T, Gagliano D, Whitlock W, Lam D, **Xiao Y**. Challenges to remote emergency decision-making for disasters or Homeland Security. *Cognition, Technology, and Work*. 9(1):15-24. 2007
35. Dexter F, **Xiao Y**, Dow AJ, Strader MM, Ho D, Wachtel RE. Coordination of Appointments for Anesthesia Care Outside of Operating Rooms Using an Enterprise-Wide Scheduling System. *Anesthesia & Analgesia* 105:1701-1710. 2007
36. **Xiao Y**, Schenkel S, Faraj S, Mackenzie CF, Moss JA. What whiteboards in a trauma center operating suite can teach us about emergency department communication. *Ann Emerg Med*. 50(4):387-95. 2007.
37. **Xiao Y**, Kiesler S, Mackenzie CF, Kobayashi M, Plasters C, Seagull FJ, Fussell S. Negotiation and conflict in large scale collaboration: a preliminary field study. *Cognition Technology & Work*. 9(3)171-176. 2007
38. Kim Y-J, **Xiao Y**, Mackenzie CF, Gardner, S. Availability of Trauma Specialists in Level I and II Trauma Centers: A National Survey. *J Trauma*. 63(3):676-683. 2007
39. Mackenzie CF, **Xiao Y**, Hu PF, Seagull FJ, Fitzgerald M. Video as a Tool for Improving Tracheal Intubation Tasks for Emergency Medical and Trauma Care . *Annals of Emergency Medicine*. 50(4):436-42. 2007
40. Miller A, **Xiao Y**. Multi-Level Strategies to Achieve Resilience for an Organization Operating at Capacity: A Case Study at a Trauma Centre. *Cognition, Technology, & Work*. 9(2):51-66. 2007
41. Gurses AP, **Xiao Y**, Seidl K, Vaidya V, Bochicchio GV. Ambiguity and guideline compliance: A qualitative study of how intensive care units follow guidelines. *Quality and Safety in Health Care* (accepted). 2007
42. Kim Y-J, **Xiao Y**, Hu P, Dutton RP. Staff Acceptance of Video Monitoring for Coordination: A Video System to Support Perioperative Situation Awareness. *Journal of Clinical Nursing* (accepted). 2007
43. **Xiao Y**, Hu P, Moss J, de Winter J, Venekamp D, Mackenzie CF, Seagull FJ, Perkins S. Opportunities and challenges in improving surgical work flow. *Cognition, Technology & Work*, accepted. 2007
44. **Xiao Y**, Dexter F, Hu FP, Dutton R. Usage of Distributed Displays of Operating Room Video when Real-Time Occupancy Status was Available. *Anesthesia and Analgesia* 2008; 106(2):554-560. 2008

Proceeding Articles (Peer Reviewed)

1. Gurses A P, Hu P, Gilger S, Dutton R P, Trainum T, Ross K, **Xiao Y**. A preliminary field study of patient flow management in a trauma center for designing information technology. *American Medical Informatics Association Annual Symposium*, P61. 2006
2. **Xiao Y**, Wasei M, Hu P, Wieringa P, Dexter F. Dynamic Management in Perioperative Processes: A Modeling and Visualization Paradigm. *12th IFAC Symposium on Information Control Problems in Manufacturing*. (3)647-52. 2006
3. Ho D, **Xiao Y**, Gurses AP, Vaidya V, Cardarelli MG, Tumulty J, Simone S, Burns-Conway D, Hu PF, Cervenka J. Artifacts Use in Safety Critical Information Transfer: A Preliminary Study of the Information Arena . *Proceedings of the Human Factors and Ergonomic Society Annual Conference*. 2007
4. Ho D, **Xiao Y**, Vaidya V, Hu P. Communication and Sense-Making in Intensive Care: An Observation Study of Multi-Disciplinary Rounds to Design Computerized Supporting Tools. *Proc AMIA Fall Symposium*. 2007

C. Research Support. List selected ongoing or completed (during the last three years) research projects (federal and non-federal support). Begin with the projects that are most relevant to the research proposed in this application. Briefly indicate the overall goals of the projects and your role (e.g. PI, Co-Investigator, Consultant) in the research project. Do not list award amounts or percent effort in projects.

Active

ITR-0325087 Xiao (PI) 2003-2008

National Science Foundation

Large scale collaboration in critical environments. The primary goal of this project is to develop a theory of coordination in multi-tasking, multi-thread complex organizations and to develop coordination support tools in large-scale collaboration and practical solutions to cross-team coordination.

Role: PI

IIS-0534646 Xiao (PI) 2005-2008

National Science Foundation

Supporting rapid transfer of information and responsibility. The primary goal of this project is to understand essential issues related to rapid transfer of information and responsibilities in mission critical domains such as medical intensive care units, and to further our understanding of embedded technology as part of collaborative systems through field research and information technology experimentation.

Role: PI

P20 HS17111-01 (PI: Hall) 2008-2009

Agency for Healthcare Research and Quality

Evaluation of Risk by Active Surveillance in the Emergency Department.

This study is to identify errors and adverse events in the emergency department through active surveillance by employing a novel approach of real-time, active surveillance of the people and processes within the ED. We will also use Failure Mode and Effect Analysis (FMEA) for medication management processes that are identified as highest risk..

Role: Co-Investigator

Yale University Research Consortium (PI: Harris) 2007-2009

Reducing hospital associated infections: Improving patient safety through implementing multi-disciplinary interventions. The overall goal of "Attaining Safety for Patients through Interdisciplinary Risk Reduction Efforts (ASPIRRE)" is to implement the AHRQ evidence-based interventions designed to improve the process of care, decrease the number of infections and improve patient safety in a diverse group of hospitals.

Role: Co-Investigator

FA7014-07-C-0042 (PI: Bochicchio) 2007-2010

US Air Force

Early Aggressive Glycemic Control in Critically Injured Patients

The main goal of this study is to compare early aggressive glycemic control to moderately aggressive glycemic control in critically injured trauma patients through a prospective randomized parallel multicenter trial.

Role: Co-Investigator

Completed

P20 HS11562-01 Xiao (PI) 2001-2005

Agency for Healthcare Research and Quality

Developmental center for education and research in patient safety. The project was to develop an education intervention and to evaluate the intervention in reducing complications associated with central venous catheters.

Role: PI