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Research Interests

Decision Support Systems, Human-Computer Interaction, Data Visualization, Human Factors, Cognitive Systems Engineering, Human Performance in Complex Systems, Medical Informatics, Human-Automation Interaction and Training Systems

Education

- Ph.D., Industrial and Systems Engineering, The Ohio State University, 1995
- M.S. Industrial and Systems Engineering, The Ohio State University, 1993
- B.S. Engineering Psychology, Tufts University, 1990, magna cum laude

Memberships

- IEEE Systems Man and Cybernetics
- IEEE Engineering in Medicine and Biology
- American Medical Informatics Association
- Human Factors and Ergonomics Society
- National Patient Safety Foundation

Current Appointments

- Associate Professor, Dept. of Systems and Information Engineering, University of Virginia, September ('05 - present)
- Affiliate Associate Professor, Dept. of Health Administration, Virginia Commonwealth University, ('05 - present)
- Associate Editor-in-Chief, IEEE Journal of Systems, Man and Cybernetics, Part A: Systems and Humans ('08 - 'present)

Past Professional Experience

- Assistant Professor, Department of Systems and Information Engineering, University of Virginia, September ('99 - '05)
- Associate Editor, IEEE Journal of Systems, Man and Cybernetics, Part A: Systems and Humans ('01 - '07)
- Associate Editor, Cognitive Engineering and Decision Making ('06 - '08)
- Panel Reviewer, National Science Foundation ('02, '04)
- Principal Research Scientist, Honeywell Technology Center, User-Centered Design Group, Department of Systems and Software ('95 - '99)
- Intern, Apple Computer, Development Tools Group (Summer, '93)
- Member of the Technical Staff, The MITRE Corporation, Human-Factors/User-System Interface Specialty Group ('89 - '90)

Honors and Awards

- Advisor to the Day 1 Best Poster at the National Library of Medicine Medical Informatics Trainee Conference, David Bauer ('08)
- Co-advisor to the Louis T. Rader Outstanding Ph.D. student, Michael Smoot ('05)
- Naval Surface Warfare Center - Dahlgren Division group achievement award ('04)
- Paper of the Year, Medical Systems and Rehabilitation HFES technical group ('01)
- Advisor to winner of Best Student Paper Award, HFES Annual Meeting ('01)
- Best Journal Paper Award, Human Factors ('99)
- American Helicopter Society Best Technical Paper Award ('99)
- Honeywell Technology Center Technical Achievement Award ('99)
- Abnormal Situation Management Research Consortium All-Star Award ('99)
- Best Student Paper Award, HFES Annual Meetings ('93 and '95)
- Student Paper Award, IEEE Systems Man and Cybernetics Annual Meeting ('95)
- Ohio State University Presidential Fellow ('95)

Grants and Contracts

- University of Virginia-----
1. Principal Investigator. \$75K ('08) Usability testing for EpiCard: Compact epinephrine auto-injector sponsored by the Intelliject, LLC.
 2. Principal Investigator. ~\$2.7M ('07-'12) Systems engineering focus on medical informatics sponsored by the National Library of Medicine (T15 Training grant).
 3. Principal Investigator. \$75K ('06-'09). US-Brazil exchange of cognitive engineering students sponsored by the National Science Foundation.
 4. Principal Investigator. \$149K ('03-'09). US-Brazil exchange: Training industrial engineers on cognitive engineering approaches to manage high risk, complex systems sponsored by the US Department of Education.
 5. Principal Investigator. \$33K ('05 - '06) Plan understanding and mission assessment (PUMA). An interactive decision support system for autonomous unmanned vehicle mission management sponsored by Office of Naval Research Intelligent Autonomy Program, through SIFT, (Phase I SBIR).
 6. Principal Investigator. \$37K ('04-'07). Leadership for junior women faculty in engineering sponsored by the National Science Foundation.
 7. Principal Investigator. \$392K ('01-'06) Cognitive engineering of surgical work processes sponsored by the National Science Foundation (CAREER grant).
 8. Principal Investigator. \$100K project ('04) Tactical tomahawk human performance testing sponsored by the DARPA Augmented Cognition Program through Lockheed Martin Advanced Technology Laboratories.
 9. Principal Investigator. \$33K ('04). Predicting the cognitive readiness of medical teams sponsored by Army Research Medical Command, through Barron's Associates, Inc. (Phase I SBIR).
 10. Principal Investigator. \$405K project ('01-'04) Decision support system for future naval capability sponsored by the Office of Naval Research through the Naval Surface Warfare Center - Dahlgren Division.
 11. Principal Investigator, \$60K ('00-'03) Visualizing protein sequence matching information sponsored by the UVA Biotechnology Training Grant.

12. Co-principal investigator. \$100K ('02-'03). Effect of structured debriefs for improving communication and coordination and reducing errors during surgery sponsored by the National Patient Safety Foundation.
 13. Co-principal investigator. \$100K ('01-'02). Effect of a checklist for improving communication and coordination and reducing errors during laparoscopic cholecystectomies, sponsored by the National Patient Safety Foundation.
 14. Principal Investigator. \$40K ('00-'01) Uninhabited missile information management sponsored by the Naval Surface Warfare Center, Dahlgren Division.
 15. Principal Investigator. \$18K ('99-'01). Conceptual design for a messaging interface in support of the Comprehensive Nuclear Test Ban Treaty sponsored by Veridian Pacific Sierra Research.
 16. Principal Investigator. \$10K ('00-'01). Effect of a structured form on the standardization of emergency medicine workup of acute abdominal pain sponsored by the UVA Department of Surgery.
 17. Principal Investigator. \$22.5K ('00-'01). Usability testing of AccuNurse sponsored by VA CIT and National Institute of Health.
- Honeywell Technology Center-----
18. Principal Investigator. (\$150K) User initiated notification. A concept for improving the monitoring activities of plant operators sponsored by the Abnormal Situation Management Research Consortium.
 19. Principal Investigator. (\$150K) The MPC Elucidator sponsored by the Abnormal Research Management Research Consortium and Honeywell Industrial Automation and Control.
 20. Co-Principle Investigator. (\$200K) Dynamic procedures sponsored by the Abnormal Situation Management Research Consortium.
 21. Principal Investigator. (\$150K) Collaborative decision aids for portable information processing systems sponsored by the Honeywell Home Run Fund.
 22. User interface designer for EPRI Contract. Thermal energy storage advisor.
 23. User interface designer for Army Contract. Rotorcraft pilot's associate crew coordination concepts.

Service

Professional Service

National Academy of Engineering

- Invited workshop participant: Systems Engineering to Improve Traumatic Brain Injury Care in the Military Health System, 2008
- Invited Speaker: 2008 Frontiers of Engineering Conference session on Cognitive Engineering, Albuquerque, NM
- Session Organizer: 2009 Frontiers of Engineering Conference, session on Clinical Informatics

IEEE Systems, Man and Cybernetics (SMC) Society

- Associate Editor-In-Chief, IEEE Transactions on Systems, Man and Cybernetics, Part A: Systems and Humans (since '08)
- Associate Editor, IEEE Transactions on Systems, Man and Cybernetics, Part A: Systems and Humans ('01- '07).
- Chair, Human-Machine Systems Technical Group ('01- '06)
- Administrative Council member, ('00-'03).
- Student paper award reviewer ('03)
- Student member (since '95), Full member (since '96), Senior Member (since '03)
- Annual Meeting Program Committee Member (since '04)

Human Factors and Ergonomics Society

- Associate Editor, Cognitive Engineering and Decision Making ('05-'08)
- Annual Proceedings Reviewer for Computer Systems, Cognitive Engineering and Decision Making, Healthcare Systems, Training Systems and Education Technical Groups (since '99)
- Speaker's Bureau Volunteer, (since '06)
- Best Student Paper Committee Chair, Cognitive Engineering and Decision Making Technical Group ('00 - '04)
- Program Chair, Computer Systems Technical Group ('98-'00)
- Secretary/Treasurer, Computer Systems Technical Group ('99-'02)
- Secretary/Treasurer, Central Ohio Chapter ('98-'99)
- President, Tufts University Student Chapter ('87-'90)
- Student member (since '86), Full member (since '96)

National Science Foundation

- Digital Societies and Technology (CISE) Panel Reviewer ('02- '05)

Program Committee

- 2004 International Conference on Enterprise Information Systems
- 2004 IEEE Systems and Information Engineering Design Symposium

Journal Reviewer

- Annals of Emergency Medicine
- Annals of Surgery
- Applied Ergonomics
- Cognitive Engineering and Decision Making
- Cognition, Technology and Work
- IEEE Transactions on Knowledge and Data Engineering
- IEEE Transactions on Systems, Man, and Cybernetics, Part A: Systems and Humans
- International Journal of Human-Computer Studies
- Quality and Safety in Healthcare

University Service

- University Health Information Technology Committee ('09-present)
- University of Virginia Institute for Quality and Patient Safety ('07-present)
- Patient Safety Committee (University Hospital) invited member ('04-present)
- Common Reading Experience Committee (School of Engineering and Applied Sciences) member ('01-present), chair ('03-'05)
- Rules and Courses Committee (School of Engineering and Applied Sciences) member ('02-present)
- Faculty Forum for Scientific Research (University of Virginia) member ('03-'04)
- Faculty Search Committees (3 for Systems and Information Engineering, 1 for Mechanical and Aerospace Engineering) ('01-'02)
- Graduate Committee (Systems and Information Engineering) member ('01-'06), chair, ('05-'06)
- Biotechnology Training Program Mentor ('01-present)
- Professor's Picks Volunteer, '06 and '09

Publications

Archival Journals

1. Lv, J., Turrentine, E. & Guerlain, S. (Accepted, 2009). Do personality and level of experience affect perceived safety culture? A study of surgical residency programs across Virginia. Safety Across High-Consequence Industries.

2. Mahone, I., Zerull, L., Akan, D., Guerlain, S., & Farrell, S. (2009). Electronic screening for mental health in rural primary care: Feasibility and user testing. *Computers, Informatics, Nursing*, 27(2), 93-98. doi: 10.1097/NCN.0b013e3181972a0d
3. Farrell, S., Mahone, I., Zerull, L., Guerlain, S., Akan, D., Hauenstein, E., & Schorling, J., (2009). Electronic screening for mental health in rural primary care: Implementation. *Issues in Mental Health Nursing*, 30(3), 165 - 173.
4. Guerlain, S. Turrentine, F. Collins, S., Calland, J.F. and Adams, R. (2008). Crew resource management for surgeons: Feasibility and impact. *Cognition, Technology and Work*, 10(4), 255-264.
5. De Carvalho, P.V., Gomes, J.O., Santos, I. L., & Guerlain, S. (2008). Human factors approach for evaluation and redesign of human -system interfaces of a nuclear power plant simulator. *Displays* 29 (3), 273-284.
6. Young, J.S. Smith, R.L., Guerlain, S. & Nolley, B. (2007). How residents think and make medical decisions: Implications for education and patient safety. *The American Surgeon* 73(6), pp. 548-554.
7. Cummings, M. & Guerlain, S. (2007). Developing operator capacity estimates for supervisory control of autonomous vehicles. *Human Factors* 49(1), pp. 1-15.
8. Cushing, J., Janssen, L.D., Allen, S. & Guerlain, S. (2006). Overview+Detail in a Tomahawk mission-to-platform assignment tool: Applying information visualization in support of an asset allocation planning task. *Information Visualization* 5, 1-14.
9. Smoot, M., Bass, E., Guerlain, S. & Pearson, W. (2005). A system for visualizing and analyzing near-optimal protein sequence alignments. *Information Visualization*, 4(3), 224-237.
10. Guerlain S, Adams R. B., Turrentine F. B., Shin T., Guo H., Collins S. R., & Calland J. F. (2005). Assessing team performance in the operating room: Development and use of a "black-box" recorder and other tools for the intraoperative environment. *Journal of the American College of Surgeons* 200(1), 29-37.
11. Guerlain, S., Turrentine, B., Calland, J.F., and Adams R. (2004). Using video data for analysis and training of medical personnel. *Cognition Technology and Work*, 6, 131-138.
12. Guerlain, S., Green, K., LaFollette, M., Mersch, T. Mitchell, B. Poole, G. R., Calland, J. F., Bovbjerg, V. and Chekan, E. (2004). Improving surgical pattern recognition through repetitive viewing of video clips. *IEEE Transactions on Systems, Man, and Cybernetics - Part A: Systems and Humans* 34(6), 1-9.
13. Smoot, M., Guerlain, S. & Pearson, W. (2003). Visualization of near optimal sequence alignments. *Bioinformatics* 19(0), 1-6.
14. Guerlain, S., Jamieson, G. A., Bullemer, P., & Blair, R. (2002). The MPC Elucidator: A case study in the design for human-automation interaction. *IEEE Transactions on Systems, Man, and Cybernetics - Part A: Systems and Humans*, 32(1), 25-40.
15. Calland, J. F., Adams, R. B., Benjamin, D.K., O'Connor, M. J, Chandrasekhara, V., Guerlain, S. & Jones, R. S. (2002). Thirty-day postoperative death rate at an academic medical center. *Annals of Surgery* 235(5), 690-698.
16. Calland, J.F., Guerlain, S., Adams, R, Tribble, C., Foley, E., & Chekan, E. (2002). A systems approach to surgical safety. *Surgical Endoscopy*, pp.1005-1014.
17. Guerlain, S., Smith, P., Obradovich, J., Rudmann, S., Strohm, P., Smith, J., and Svirebely, J. & Sachs, L. (1999). Interactive critiquing as a form of decision support: An empirical evaluation. *Human Factors*, 41(1), 72-89. (winner of best paper award, 1999)
18. Guerlain, S., Lee, J., Kopischke, T., Romanko, T., Reutiman, P., & Nelson, S. (1999). Supporting collaborative field operations with personal information processing systems. *Mobile Networks and Applications*, 4, pp. 37-48.

19. Guerlain, S., Smith, P., Obradovich, J., Rudmann, S., Strohm, P., Smith, J., & Svirbely, J. (1996). Dealing with brittleness in the design of expert systems for immunohematology. *Immunohematology*, 12(3), pp. 101-107.
20. Miller, T., Smith, P., Gross, S., Guerlain, S., Rudmann, S., Strohm, P., Smith, J. W., & Svirbely, J. (1993). The use of computers to teach clinical laboratory science. *Immunohematology*, 9(1), 22-27.

Patents

1. Jamieson, G. A., Guerlain, S., & Bullemer, P. (2005). Process variable gauge interface and methods regarding same. US 6,952,808, Oct. 4, 2005.
2. Guerlain, S., Jamieson, G. A., & Bullemer, P. (2005). Process variable generalized graphical device display and methods regarding same. US 6,901,560, May 31, 2005
3. Guerlain, S., Jamieson, G., A., & Bullemer, P. (2003). Multivariable process matrix display and methods regarding same. US 6,587,108 B1, Jul. 1, 2003.
4. Jamieson, G. A., Guerlain, S., & Bullemer, P. (2003). Multivariable process trend display and methods regarding same. US 6,577,323 B1, Jun. 10, 2003.
5. Guerlain, S. (2002). Method and apparatus for user-initiated alarms in process control system. US 6,414,594 B1, Jul. 2, 2002.

Edited Book Chapters

1. Guerlain, S. & Calland, J.F. (2009) RATE: A customizable, portable hardware/software system for analyzing and teaching human performance in the operating room. In R.Flin & L.Mitchell (Eds.) *Safer Surgery. Analysing Behaviour in the Operating Theatre*. Farnham: Ashgate.
2. Guerlain, S. (2007). Software navigation design. In G. Allen (Ed.) *Applied Spatial Cognition. From Research to Cognitive Technology*. Mahwah, NJ: Lawrence Erlbaum Associates, pp. 317-337.
3. O'Hargan, K. & Guerlain, S. (2006). Design of a resource allocation planning system. In T. Clemmensen, P. Campos, R. ORngreen, A.M. Pejtersen and W. Wong (Eds.) *IFIP International Federation for Information Processing, Volume 221, Human Work Interaction Design: Designing for Human Work*, Boston:Springer, pp.. 67-92.
4. Obradovich, J., Smith, P., Guerlain, S., Rudmann, S., Strohm, P., Smith, J., Svirbely, J., & Sachs, L. (1997). The role of proactive and embedded training in the design of an expert system for teaching transfusion medicine. In M. Mouloua and J.Koonce (Eds.), *Human-Automation Interaction: Research and Practice* (pp. 225-232). Mahwah, NJ: Lawrence Erlbaum Associates.
5. Guerlain, S., & Smith, P. J. (1996). Decision support in medical systems. In R. Parasuraman and M. Mouloua (Eds.), *Automation and Human Performance. Theory and Applications* (pp. 385-406). Mahwah, NJ: Lawrence Erlbaum Associates.
6. Guerlain, S., Smith, P. J., Gross, S. M., Miller, T. E., Smith, J. W., Svirbely, J. R., Rudmann, S., & Strohm, P. (1994). Critiquing vs. partial automation: How the role of the computer affects human-computer cooperative problem solving. In M. Mouloua and R. Parasuraman (Eds.), *Human Performance in Automated Systems: Current Research and Trends*. Hillsdale, New Jersey: Lawrence Erlbaum Associates, pp. 73-80.

Archival Journals -in preparation

1. Guerlain, S., LeBeau, K., Thompson, M., Donnelly, C., McClellan, H., Syverud, S. & Calland, J.F. (In preparation). The effect of forms/checklists on data collection behavior. *Human Factors*.
2. Guerlain, S. The model for interactive decision support (MIDS). (In preparation). *International Journal of Human-Machine Studies*.

3. Guo H. Calland, J, Stephanie A. Guerlain, Ph.D. ‡, Frank E. Harrell Jr., Ph.D†., Florence E. Turrentine, Ph.D.*, Viktor E. Bovbjerg, Ph.D.† , & Reid B. Adams, M.D., (In preparation). Postoperative outcome: The influence of nights, weekends, and holidays. *Journal of the American College of Surgeons*.
4. Shin, T. Turrentine, B & Guerlain, S. (In preparation). Team performance measurement: measuring inter-rater reliability/agreement of independent team scores. *Journal TBD*

Peer-Reviewed Magazine Articles

1. Guerlain, S. (2001, Summer). Judging pace cross-country. How cognitive task analysis yields insight into an apparently simple, yet complex horse-rider activity. *Ergonomics in Design*, 9(3), 13-18.
2. Guerlain, S., Jamieson, G., & Bullemer, P. (2003, August). Visualizzazione dei programmi di controllo predittive basati su modelli. *Operations, Engineering, Produzione e Asset Management*, 1(2) 75-78.

Peer-Reviewed Conference Proceedings

1. Guerlain, S. and Peckinpaugh, A. (2008). The need for international human factors engineering education programs: Barriers, benefits and an evaluation methodology. *Proceedings of the 52nd Annual Meeting of the Human Factors and Ergonomics Society*, New York, NY:HFES.
2. Guerlain, S. Woods, D. and Gomes, J.O. (2008). US-Brazil cognitive systems engineering exchange program. *Proceedings of the 52nd Annual Meeting of the Human Factors and Ergonomics Society*, New York, NY:HFES.
3. Bauer, D. Guerlain, S. and Brown, P. (2007). Information requirements for physician training, assessment and decision support of acid-base disorders. *IEEE SMC 2007*, Montreal, Canada.
4. Machado, R. G., Borges, M. R. S., Guerlain, S. and Gomes, J. O. An observation model for the collaborative analysis of real workplaces. *Proceedings of the 11th International Conference on Computer Supported Cooperative Work in Design*. Melbourne, Australia : Swinburne Press, 2007. v. 1. p. 292-297, ISBN: 1-424-40962-4.
5. Bauer, D. Guerlain, S. and Brown, P. (2006). Evaluating the use of flowsheets in pediatric intensive care to inform design. *Proceedings of the 50th Annual Meeting of the Human Factors and Ergonomics Society*, San Francisco, CA:HFES, 1054-1058.
6. O'Hargan and Guerlain, S. (2006). Design of a resource allocation planning system. *Proceedings of the 50th Annual Meeting of the Human Factors and Ergonomics Society*, San Francisco, CA:HFES, 665-668.
7. Guerlain, S., Goldman, R., Funk, H. & Allen, S. (2006). Plan understanding and mission assessment (PUMA): An interactive decision support system for autonomous unmanned vehicle mission management. *Third Annual Human Factors of UAV's Workshop*, Mesa, AZ: CERI Institute, May 24-26, 2006.
8. Guerlain, S. Allen, S., Cushing, J., Van Eron, K., Janssen, D., Jones, C., McCrystal, T., O'Hargan, K., Rached, T. and Willis, R. (2005). A multi-operator simulation testbed for studying the human factors of UAV strike planning and execution. *Second Annual Human Factors of UAV's Workshop*, May 25-26, 2005, Mesa, AZ.
9. O'Hargan, K. & Guerlain, S. (2005). Comparing supervisory control user interface concepts for redirecting unmanned vehicles. *Human Systems Integration Symposium*, June 20-22, 2005, Arlington, Virginia
10. Allen, S., Jones, C. & Guerlain, S. (2005). The effect of command and control team structure on ability to quickly and accurately retarget unmanned vehicles. *HCI International*, July 22-27, 2005, Las Vegas, NV.

11. Guerlain, S., Turrentine, F. and Lv, J. (2005). A study of surgical residency programs across Virginia shows that personality and level of experience affect perceived safety culture. Safety Across High-Consequence Industries Conference, St. Louis, MO: September 20-22, 2005.
12. Cummings, M. L., Guerlain, S. & Bass, E.J. (2004). Explorations in cognitive work analysis. Informing design of a command and control decision support interface through an abstraction hierarchy. Proceedings of the 48th Annual Meeting of the Human Factors and Ergonomics Society, Santa Monica, CA:HFES, pp. 489-493.
13. Cushing, J., Allen, S. & Guerlain, S. (2004). Measuring the effectiveness of an overview display for mission planning. IEEE 2004 Conference on Systems, Man and Cybernetics, The Hague, Netherlands, pp. 1533-1537.
14. Guerlain, S., O'Hargan, K., Lander, E., Gibson, W., Chang, J., Donohue, S., Parker, B., & Clark, B. (2004) Predicting the cognitive readiness of Army search and rescue teams. IEEE 2004 Conference on Systems, Man and Cybernetics, The Hague, Netherlands, pp. 5515-5519.
15. Cummings, M. L., & Guerlain, S. (2004). Using a chat interface as an embedded secondary tasking tool. Human Performance, Situation Awareness and Automation Technology II Conference, Daytona Beach, FL.
16. Seagull, F. J. & Guerlain, S. (2003). Observational measures of team process and performance in health care. Proceedings of the 47th Annual Meeting of the Human Factors and Ergonomics Society, Santa Monica, CA:HFES, p. 1486-1487.
17. Turrentine, B., Calland, J.F., Adams, R., Shin, T. & Guerlain, S. (2003). Studying communication patterns in surgery. Proceedings of the 47th Annual Meeting of the Human Factors and Ergonomics Society, Santa Monica, CA:HFES, pp. 1488-1492.
18. Guerlain, S., Green, K.B., LaFollette, M., Mersch, T., Mitchell, B., Poole, G.R., Adams, R., Calland, J.F., Bovbjerg, V., & Chekan, E. (2003). Training anatomy recognition through repetitive viewing of laparoscopic surgery video clips. Proceedings of the 47th Annual Meeting of the Human Factors and Ergonomics Society, Santa Monica, CA:HFES, pp. 391-395.
19. Cummings, M. & Guerlain, S. (2003). The tactical tomahawk conundrum: Designing decision support systems for revolutionary domains. Proceedings of the IEEE Conference on Systems, Man, and Cybernetics, pp. 1583-1588.
20. Guerlain, S., Shin, T., Guo, T., Adams, R., & Calland, J.F. (2002). A team performance data collection and analysis system. Proceedings of the 46th Annual Meeting of the Human Factors and Ergonomics Society Santa Monica, CA:HFES, pp. 1443-1448.
21. Guerlain, S., Shin, T., Guo, H., Adams, R., & Calland, J.F. (2002). The RATE Tool: Multimedia observation and analysis of teams. Proceedings of the 46th Annual Meeting of the Human Factors and Ergonomics Society, Santa Monica, CA:HFES, p. 755.
22. Guerlain, S., Calland, J.F., Thompson, M., & LeBeau, K. (2001). The effect of a standardized data collection form on the examination and diagnosis of patients with abdominal pain. Proceedings of the 45th Annual Meeting of the Human Factors and Ergonomics Society. pp. 1284-1288. **(Winner of best Medical Systems paper award, 2001)**
23. Guerlain, S., Willis, R., Besselman, J., Logsdon, M. Whisnant, B. & Yewcic, T. (2001). Testbed for evaluating tactical situation awareness and decision making. Proceedings of the 45th Annual Meeting of the Human Factors and Ergonomics Society, p. 751.
24. Brown, D. Green, J., Guerlain, S., Hashemi, B., Rauschenberg, R. Stacy, C., Mason, R. & Bohlin, J. (2001). Radionuclide analysis messaging environment for verification of the Comprehensive Nuclear Test Ban Treaty. Persistent Conversation minitrack at Hawaii International Conference on System Sciences 2001

25. Guerlain, S., Pritchett, A., Hayes, C. & Smith, P. (2001). Exercises/techniques for teaching cognitive systems engineering, Proceedings of the 45th Annual Meeting of the Human Factors and Ergonomics Society. p. 453.
26. Calland, J., Guerlain, S., Benjamin, D., Seely, O., Foley, E., & Adams, R. (2001). Opinions of Virginia surgeons and primary care physicians toward issues of patient safety, The Southeastern Surgical Congress, New Orleans, LA.
27. Willis, R. (2001). Effect of display design and situation complexity on operator performance. Proceedings of the 45th Annual Meeting of the Human Factors and Ergonomics Society, p. 346-350 (advisor to winner of Best Student Paper Award, 2001)
28. Guerlain, S. (2000). Interactive advisory systems. Human Performance, Situation Awareness and Automation Conference, Savannah, GA. pp. 166-171.
29. Guerlain, S., Jamieson, G. & Bullemer, P. (2000). Visualizing model-based predictive controllers. Proceedings of the IEA 2000/HFES 2000 Congress, San Diego, CA, pp. 3-511 to 3-514.
30. Guerlain, S., & Bullemer, P. (2000). Critiquing team procedure execution. Proceedings of the IEA 2000/HFES 2000 Congress, San Diego, CA, pp. 3-515 to 3-518.
31. Jamieson, G. and Guerlain, S. (2000). Operator interaction with model-based predictive controllers in petrochemical refining. Human Performance, Situation Awareness and Automation Conference, Savannah, GA. pp. 172-177.
32. Obradovich, J., Smith, P.J., Guerlain, S., Rudmann, S., & Smith, J., (2000). Field evaluation of an intelligent tutoring system for teaching problem-solving skills in transfusion medicine. Proceedings of the IEA 2000/HFES 2000 Congress, San Diego, CA, pp. 2-338 to 2-341.
33. Miller, C., Hannen, M., & Guerlain, S. (1999). The Rotorcraft Pilot's Associate Cockpit Information Manager: Acceptable behavior from a new crew member? American Helicopter Society 55th Annual Forum. **(Winner of Best Paper Award)**
34. Obradovich, J., Smith, P., Guerlain, S., Smith, J., Rudmann, S., Strohm, P., & Denning, R. (1996). The Transfusion Medicine Tutor: Using expert systems technology to teach domain-specific problem-solving skills. Proceedings of the Third International Conference on Intelligent Tutoring Systems.
35. Obradovich, J., Smith, P. J., Guerlain, S., Smith, J., Rudmann, S., Sachs, L., Svirebely, J., Kennedy, M., & Strohm, P. (1996). Design concepts for an instructional tool: Teaching abductive reasoning in antibody identification. Proceedings of the 1996 Annual Meeting of the ACM Society for Computer-Human Interaction (CHI). New York: ACM Press, pp. 13-14.
36. Guerlain, S., & Bullemer, P. (1996). User-initiated notification: A concept for aiding the monitoring activities of process control operators. Proceedings of the Human Factors and Ergonomics Society 40th Annual Meeting-1996, Santa Monica, CA: HFES, pp. 283-287.
37. Shapiro, R., Andre, A., Dempsey, P., Green, G., Guerlain, S., & Sayer, T. M. B. (1996). From the Classroom to a Career: What You'll Need to Know for a Successful Transition, in "Preparing for a Career in Human Factors/Ergonomics, A Resource Guide" Proceedings of the Human Factors and Ergonomics Society 40th Annual Meeting. Santa Monica, CA: HFES.
38. Guerlain, S. (1995). Using the critiquing approach to cope with brittle expert systems. Proceedings of the Human Factors and Ergonomics Society 39th Annual Meeting. Santa Monica, CA: HFES, pp. 233-237. **(Winner of Best Student Paper Award)**
39. Guerlain, S., Smith, P. J., Obradovich, J., Smith, J. W., Rudmann, S., & Strohm, P. (1995). The Antibody Identification Assistant (AIDA). An example of a cooperative computer support system. Proceedings of the IEEE International Conference on Systems, Man, and Cybernetics, Vancouver, BC, pp. 369-374. **(Winner of Best Student Paper Award)**

40. Obradovich, J., Smith, P., Guerlain, S., Rudmann, S., Strohm, P., Smith, J., Svirbely, J., & Sachs, L. (1995). The role of embedded and proactive training in the design of an expert system for teaching transfusion medicine. Proceedings of the Second Automation Technology and Human Performance Conference. Cocoa Beach, FL, Mar. 7-9.
41. Guerlain, S. (1993). Factors influencing the cooperative problem-solving of people and computers. Proceedings of the Human Factors and Ergonomics Society 37th Annual Meeting, Santa Monica, CA: HFES, pp. 387-391. **(Winner of Best Student Paper Award)**
42. Guerlain, S., Smith, P., Miller, T., Gross, S., Smith, J., & Rudmann, S. (1991) A testbed for teaching problem solving skills in an interactive learning environment. Proceedings of the Human Factors Society 35th Annual Meeting, Santa Monica, CA: HFES. p.1166.
43. Smith, P., Miller, T., Gross, S., Guerlain, S.A.E., Smith, J.W., Svirbely, J., Rudmann, S., Strohm, P., & Galdes, D.K. (1991) The Transfusion Medicine Tutor: Methods and results from the development of an interactive learning environment for teaching problem-solving skills. Proceedings of the Human Factors Society 35th Annual Meeting, Santa Monica, CA: HFES. pp.1408-1412.

Peer-Reviewed Abstracts

1. Pelletier S, Lyman J, Dalton J, Tropello S, Dembling B, Scully K, Boyd J, Beling P, Guerlain S, Bass E, Knaus W, Brown D (2002). Design approach for a database system integrating and interpreting demographic, clinical and biological data. American Journal Of Human Genetics 71 (4): 375-375 1191 Suppl. S.
2. Calland, J.F., Guerlain, S. Jones, S.A., Bovbjerg, V.E. and Adams, R.B. (2002). Cognitive engineering in surgery: Studying whole-team performance in the operating room and measuring cognitive skills in laparoscopic surgeons. American College of Surgeons.
3. Calland, J.F., Jones, R. S., Guerlain, S., and Adams, R. (2002). Situation awareness during laparoscopic surgery: The Surgeon's Checklist. NPSF Annenburg IV: Patient Safety: Let's Get Practical

Non-Peer-Reviewed Conference Proceedings

1. Borges, G., McGowan, C., Meehan, K., Bieger, A., Kranz, S., Mancuso, L. Guerlain, S. and Guimaraes, L. (2009). Increasing the Efficiency of a Brazilian Emergency Response Center. 2009 IEEE Systems and Information Engineering Design Symposium, Charlottesville, VA.
2. Clinkingbeard, C., Froehlich, A., Smith, C., Calland, J. F. and Guerlain, S. (2009). Designing a physician's daily note template to support higher quality documentation of patient information. 2009 IEEE Systems and Information Engineering Design Symposium, Charlottesville, VA.
3. Dunlap, T., Rada, S., Silva, M., Verboonen, J., Yang, R., Gomes, J., and Guerlain, S. (2009). Redesigning the user interface for an intelligent oilfield system. 2009 IEEE Systems and Information Engineering Design Symposium, Charlottesville, VA.
4. Burnham, M, Kenton, G., Goldani, L, Zanchet, T. Guerlain, S. and Buarque de Macedo Guimarães, L. (2008). Designing the user interface for an online nursing assessment system 2008 IEEE Systems and Information Engineering Design Symposium, Charlottesville, VA.
5. Cobb, N., Tejano, K., Monte de O. Lima, C., Gomes, J.O. and Guerlain, S. (2008). Human factors analysis and interface design for a truck dispatching system. 2008 IEEE Systems and Information Engineering Design Symposium, Charlottesville, VA.
6. Calland, J.F., Guerlain, S. Jones, S.A., Bovbjerg, V.E. & Adams, R.B. (2002). Three years of multi-disciplinary research in perioperative patient safety: What have we learned? Virginians Improving Patient Care and Safety

7. Chang, J., Gibson, W., Lander, E., O'Hargan, K., Donohue, S., Guerlain, S., Clark, B., & Parker, B. E. (2004) Assessing individual and team readiness. Proceedings of the 2004 Systems and Information Engineering Design Symposium, (M. Jones, S. Patek, B. Tawney, Eds.) IEEE, pp. 249-257.
8. Chekan E.G.; Mitchell B.A., Poole G.R., Luniewski, M., Green, B., Mersch, T., Calland, J.F., & Guerlain, S. (2002). A CD-Rom-based laparoscopic surgery video training simulator. Conference of the Virginia Chapter of the American College of Surgeons.
9. Cummings, M. & Guerlain, S. (2004). An interactive decision support tool for real-time in-flight replanning of autonomous vehicles, Proceedings of the American Institute of Aeronautics and Astronautics, Chicago, IL.
10. Cummings, M. & Guerlain, S. (2004). Human performance issues in supervisory control of autonomous airborne vehicles. AUVSI's Unmanned Systems North America 2004, Anaheim, CA.
11. Donnelly, C., LeBeau, K., McClellan, H., Thompson, M., Guerlain, S., Brown, D., Calland, J. F., & Syverud, S. (2001). The effect of an emergency medicine structured data collection form in aiding in acute abdominal pain examination and diagnosis. 2001 Systems and Information Engineering Capstone Conferences, Charlottesville, VA,
12. Goldman, R., Guerlain, S., Miller, C., & Musliner, D. (1997). Integrated task representation for indirect interaction. 1997 AAAI Spring Symposium on Computational Models for Mixed Initiative Interaction.
13. Green, K. B., Luniewski, M. S., Mersch, T. C., Mitchell, B. A., Poole, G. R., Guerlain, S., Adams, R., Calland, J.F., & Chekan, E.G. (2002). Video-based training for laparoscopic surgery, 2002 IEEE Systems and Information Design Symposium University of Virginia, 103-109.
14. Green, J., Hashemi, B., Rauschenberg, R., Stacey, C., Brown, D., & Guerlain, S. (2000). Network and data quality assurance analysis in support of the Comprehensive Nuclear Test Ban Treaty. International Council on Systems Engineering Mid-Atlantic Regional Conference, INCOSE: Reston, VA.
15. Guerlain, S. Smith, P., Smith, J., Rudmann, R., & Obradovich, J. (1999). Expert Critiquing Systems as a Form of Decision Support. Second Conference on the Development of Technology in Medicine, Charlottesville, VA.
16. Guerlain, S., Brown, D. & Mastrangelo, C. (2000). Intelligent decision support systems. Proceedings of the IEEE Conference on Systems, Man, and Cybernetics, Nashville, TN, pp. 1934-1938.
17. Guerlain, S. & Willis, R (2001). The tactical tomahawk weapons control system: Operator interface design project. 2001 Human Systems Integration Symposium.
18. Guerlain, S. (2000). Field development and test of interactive, on-line procedures to support operations teams. The Third International Topical Meeting on Nuclear Plant Instrumentation, Control, and Human-Machine Interface Technologies, NPICand HMIT 2000, Washington, DC, USA - November 13-17, 2000
19. Guerlain, S., LeBeau, K., Thompson, M., Donnelly, C., McClellan, H., Syverud, S. & Calland, J.F. (2004). The effect of forms/checklists on data collection behavior. Proceedings of the 2004 Safety Across High-Consequence Industries Conference, p. 213-218.
20. Jones, C. & Guerlain, S. (2004). Measuring the effectiveness of a "decision matrix" for missile retargeting decisions. 2004 IEEE Systems and Information Design Symposium. Charlottesville, VA.
21. Manzi, M., Soltani, B., Antonello, P., Queres J., Guerlain, S., & Gomes, J. (2005). Designing a ballast control system operator interface. Proceedings of the 2005 Systems and Information Engineering Design Symposium, (E. Bass, Ed.) IEEE. (3rd place, Human Factors category).

22. Pratsch, C., Cutrona, C., Welter, A., Valcarengh, C., Guerlain, S., & Guimarães, L. (2006). Resource allocation interface design for an oil distribution plant. 2006 IEEE Systems and Information Engineering Design Symposium, Charlottesville, VA.
23. Rixey, R., Shepley, J., de Carvalho, E. & Guerlain, S. (2006). Design of a nuclear power plant supervisory control system. 2006 IEEE Systems and Information Engineering Design Symposium, Charlottesville, VA.
24. Rudmann, S., Guerlain, S., Smith, P., Smith, J., Svirbely, J., & Strohm, P. (1992) Reducing the complexity of antibody identification tasks using case-specific, computerized displays. Abstract presented at the 45th Annual Meeting of the American Association of Blood Banks, San Francisco, CA, Nov 7-12, 1992.
25. Smith, P. J., Miller, T., Gross, S., Guerlain, S., Smith, J., Svirbely, J., Rudmann, S., & Strohm, P. (1992). The transfusion medicine tutor: A case study in the design of an intelligent tutoring system. Proceedings of the 1992 Annual Meeting of the IEEE Society of Systems, Man, and Cybernetics.
26. Smith, P.J., Obradovich, J., Guerlain, S., Rudmann, S., Strohm, P., Smith, J., Svirbely, J., & Sachs, L. (1998). Design concepts underlying the use of an expert system to teach diagnostic reasoning for antibody identification. Proceedings of the IEEE Conference on Systems, Man, and Cybernetics. San Diego, CA, 932-936.
27. Smith, P. J., Obradovich, J. Heintz, Guerlain, S., Rudmann, S., Strohm, P., Smith, J.W., Svirbely, J., & Sachs, L. (1998). Successful use of an expert system to teach diagnostic reasoning for antibody identification. Proceedings of the Fourth International Conference on Intelligent Tutoring Systems. San Antonio, Texas, August 16-19, 354-363.
28. Smith, P., Obradovich, J., Guerlain, S., Smith, J., Rudmann, S., Strohm, P., and Denning, R. (1995). Embedded training for teaching transfusion medicine. Proceedings of the 1995 Conference on Applications of Teaching in the Science Classroom. The National Center for Science Teaching and Learning, Columbus, OH, March 9-10, 117-129.
29. Smith, B., Scherer, T., Evans, M. & Guerlain, S. (2003). Dynamic transportation system condition maps: Usability analysis to support improved visualization, 4th Joint International Symposium on Information Technology in Civil Engineering, Nashville, TN.
30. Smoot, M., Pearson, W. & Guerlain, S. (2002). Near-optimal alignment display tool. Proceedings of the IEEE Conference on Systems, Man, and Cybernetics.
31. Willis, R. & Guerlain, S. (2000). Tactical Tomahawk Missile System User Interface Analysis and Design Department of Defense Human Factors Engineering Technical Advisory Group (DoD HFE TAG) Meeting Number 45, November 6-9, 2000, El Paso, TX.
32. Yandziak, J. Verboonen, M., de Lima, O., Guerlain, S. & Gomes, O. (2006). Critical review and redesign of a petroleum accident/incident reporting system. 2006 IEEE Systems and Information Engineering Design Symposium, Charlottesville, VA.

Peer-Reviewed Posters

1. Guerlain, S. and Calland, JF. (2008). RATE: An Ethnographic Data Collection and Review System. AMIA 2008, Washington, D.C.
2. Calland, J., Foley, E, Guerlain, S, & Adams, R. A systems approach to surgical safety: Procedural checklists and automated data collection. American College of Surgeons -- Scientific Poster Session. 2000. Chicago, IL.

Technical Reports

1. Osga, G. Linville, M., Guerlain, S., O'Hargan, K., Seymour, G., Thomas, A., Treat, T., & Weaver, J. (2004). Tomahawk Strike Coordinator Cognitive Task Analysis SPAWAR Systems Center San Diego Technical Report #1919, October 2004.
2. Chechile, R., Guerlain, S., & O'Hearn, B. (1989). A comparative study between mental workload and a priori measures of display complexity. AAMRL/HEF Technical Report, Wright Patterson Air Force Base, Dayton, OH.

Newsletter Articles

1. Guerlain, S. & Calland, J. F. (2000). FDA and ASHRM host live teleconference on medical error/patient safety. MSRTG News (Newsletter of the Medical Systems and Rehabilitation Technical Group of the Human Factors and Ergonomics Society). 12(2) p. 3-5.

Press Coverage

1. "Reducing 'user error': U.Va. engineer developing safer, more effective systems for high-risk industries." University of Virginia E-News Online. October, 2008.
2. "The classroom comes alive for students onboard Rio de Janeiro." Proud Thoughts. Issue 5, 1st Quarter, 2005, p. 5. Pride International, Inc.
3. "The Brazilian Connection." University of Virginia Engineering Impact. February, 2006, Volume 6(3), p. 4.

Short Courses Taught

1. "Human-Centered Systems Design" Wyeth Pharmaceuticals, October, 2007.
2. "Human-Centered Design" ExxonMobil Research and Engineering, June, 2007.
3. "Human-Computer Interaction" University of Virginia Accelerated Master's Program, 2003.

Invited Presentations

1. **Plenary Speaker**, "Human-Automation Interaction" 2008 Human Factors Research Symposium, Virginia Polytechnic University, Blacksburg, VA October 25, 2008.
2. **Panelist**, "Cognitive Engineering. It's Not What You Think" 2008 U.S. Frontiers of Engineering Conference, National Academy of Engineering, Albuquerque, NM September 19, 2008.
3. "Methods for measuring team communication and coordination" Research Methods Symposium, Royal College of Surgeons of Edinburgh, November 16, 2007.
4. "Patient Safety Research at the University of Virginia" Vanderbilt University Medical School, November 1, 2007.
5. **Panelist**, "Beyond 'See-One, Do-One, Teach-One'. Applying Human Factors to Clinical Training and Education" Human Factors and Ergonomics Society Conference, Baltimore, MD, October, 2007.
6. "Resource Allocation Planning Systems" Ohio State University Institute for Ergonomics, August 8, 2007.
7. "Human Factors and Patient Safety" VCU Executive Fellowship Program in Patient Safety, Richmond, VA Jun, 2007.
8. "Studying Team Communication and Coordination in Surgery" SUNY Buffalo Department of Industrial and Systems Engineering, Buffalo, NY, November 31, 2006
9. "Studying Team Communication and Coordination in Surgery" Western New York Chapter of the Human Factors and Ergonomics Society, Rochester, NY, November 30, 2006.
10. "Designing for Human-Automation Interaction", ExxonMobil Research and Engineering, November 11, 2006.

11. "Studying Team Communication and Coordination in Surgery" Tufts University Department of Mechanical Engineering, February 1, 2007.
12. "Studying Team Communication and Coordination in Surgery" Texas A&M University Department of Industrial and Systems Engineering, February 19, 2007.
13. "Studying Team Communication and Coordination in Surgery" University of Texas School of Public Health, February 20, 2007.
14. "Studying Team Communication and Coordination in Surgery" University of Toronto Department of Mechanical and Industrial Engineering, May 30, 2007.
15. "A redesign of advanced process control displays to better support operator tasks." I Seminário de Ergonomia da Petrobras, Rio de Janeiro, Brazil, 2005.
16. "Using cognitive ergonomics to avoid incidents and accidents." I Seminário de Ergonomia da Petrobras, Rio de Janeiro, Brazil, 2005.
17. **Plenary Speaker:** "Human factors and patient safety." Creating a Healthier Virginia: A VHQC Integrated Collaborative, Richmond, VA, 2004
18. "Human factors and patient safety." Grand Rounds Lecture, Carilion Health System, Department of Surgery, Roanoke, VA, 2004.
19. "Human factors and patient safety." Grand Rounds Lecture, University of Virginia Health System Department of Surgery, Charlottesville, VA, 2004.
20. "Human factors and patient safety." Grand Rounds Lecture, INOVA Fairfax Hospital Department of Surgery, Fairfax, VA, 2004.
21. **Panelist,** Safety Across High-Consequence Industries Conference, St. Louis, MO, April, 2004.
22. "How cognitive human factors affects patient safety." Grand Rounds Lecture, Eastern Virginia Medical School Department of Surgery, Richmond, VA, 2003.
23. "Designing displays to support operator tasks." Workshop Sobre Seguranca e fatores humanos em sistemas automatizados de dutos e terminais, sponsored by Transpetro and the Federal University of Rio de Janeiro, Rio de Janeiro, Brazil, 2003
24. "The model for interactive design." University of Iowa Department of Industrial Engineering Graduate Colloquium Series, Iowa City, IA, 2003
25. "Human factors in patient safety." Virginia Commonwealth University Executive Fellowship in Patient Safety, Williamsburg, VA, 2003.
26. "Human factors in patient safety." Virginia Commonwealth University Executive Fellowship in Patient Safety, Williamsburg, VA, 2002
27. "Patient safety research." Invited talk for University of Maryland Shock Trauma Human Factors Center, Baltimore, MD, 2001.
28. "Advanced user interface concepts for supervisory control of the tactical tomahawk." TechDay 2001. Johns Hopkins University Applied Physics Lab, sponsored by Department of the Navy PMA-282, Laurel, MD, 2001.
29. "Human-Automation Interaction." TechDay 2000, Johns Hopkins University Applied Physics Lab, sponsored by Department of the Navy PMA-282, Laurel, MD, 2000.

Ph.D. Dissertations Advised

1. Smoot, M. (2005). Analyzing, Exploring and Visualizing Near Optimal Protein Sequence Alignments. University of Virginia Doctoral Dissertation.
Mike is employed at UC San Diego in the Department of Bioengineering as a Software Architect.
2. Cummings, M. (2003). Designing Decision Support Systems for Revolutionary Command and Control Domains University of Virginia Doctoral Dissertation.
Missy is Boeing Assistant Professor in the Department of Aeronautics and Astronautics at MIT

3. Lankford, C. (2002). Design and Implementation of a Portable Eye-tracking System. University of Virginia Doctoral Dissertation.
Chris is President of Eye Response Technologies.

M.S. Theses Advised

1. Bauer, D. (2009). The Design and Evaluation of a Novel Laboratory Data Display.
Dave is continuing as a Ph.D. student with me.
2. Long, K. (2005). Expert/Novice Differences in Interpreting Neonatal Intensive Care Flowsheet Data.
Kevin is an engineer at Epic Systems, a healthcare software systems firm.
3. Allen, S. (2004). Interface Design and Team Structure in a Collaborative Environment.
Steve is President of Emiror, Inc., a software development firm.
4. Cushing, J. (2003). A Measurement of the Effectiveness of an Overview Display for the Mission to Launch Platform Assignment Process Essential to the Tomahawk Strike Coordinator.
John is an Instructor in the Department of Systems Engineering at West Point.
5. Guo, H. (2003). Are Patients at Higher Risk if Having Operations at Night, on Weekends, or Holidays?
Hui is a data analyst at comScore Networks.
6. O'Hargan, K. (2005). Design of a Resource Allocation Planning System.
Kelly is an acquisitions officer in the Air Force.
7. Shin, T. (2003). Team Performance Measurement: Measuring Inter-Rater Reliability/Agreement of Independent Team Scores.
Tom is attending dental school at the University of Pennsylvania.
8. Lv, J. (2004) Comparing Safety Culture in Surgery Teaching Services across Virginia.
Jianhong works for the American Institutes of Research as a data analyst.
9. Willis, R. (2001). Tactical Tomahawk Weapon Control System User Interface Analysis and Design.
Rob is an Army Aviation test pilot.

Current Graduate Students

1. Bauer, D. University of Virginia Doctorate, expected May, '11.
2. Colligan, R. L., University of Virginia Master's, expected May, '11
3. Hugine, A. University of Virginia Doctorate, expected May, '11.
4. Meth, S. University of Virginia Masters, expected Dec '10
5. Wang, L. University of Virginia Doctorate, expected May, '11.

United States Security Clearance

Secret 06-FEB-2004 (now expired)