

Department of Cognitive Science  
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## RESEARCH INTERESTS

My research in human-computer interaction focuses on how interactive information visualization can support exploration and understanding of complex information. The current focus is working with researchers that collect multiple types of time-coded data, such as video, sensor data, and simulation logs. My approach to understanding this problem lies at the intersection of multiple disciplines, including cognitive science, computer science, and the social sciences. Observations of real-world activity guide design and lead to experimental evaluation of visualization and interaction techniques.

## EDUCATION

University of California, San Diego, La Jolla, California

Ph.D. in Cognitive Science, in progress

M.S. in Cognitive Science, 2010

Research topic: Navigation of time-coded multimodal data

Advised by Jim Hollan

Brown University, Providence, Rhode Island

B.A. in Cognitive Science and Computer Science, *Magna cum laude*, 2004

## RESEARCH EXPERIENCE

**Distributed Cognition and Human-Computer Interaction Laboratory**

*Department of Cognitive Science, University of California, San Diego*

September 2007 - present

Designed, developed and evaluated techniques for interactive visualization and analysis of multiple streams of time-coded data. Created and supported *ChronoViz* software (written in Objective-C using the Cocoa frameworks, with a Python-based plugin architecture), used by many researchers, at UCSD and other institutions, to visualize and aid analysis of multimodal time-coded data. ChronoViz is available at [chronoviz.com](http://chronoviz.com).

## INDUSTRY EXPERIENCE

**Scientist**, *Charles River Analytics*, Cambridge, Massachusetts

June 2004 - August 2007

Researched, designed and experimentally validated human factors issues related to the operation of unmanned vehicles and decision making under uncertainty. Designed and implemented software (in Java) to support the exploration and rapid evaluation of display design concepts.

**Technical Intern**, *Rockwell Scientific*, Thousand Oaks, California

Summers 2000, 2001, 2003

Researched and implemented hidden-line rendering and matching algorithms (written in C++ and OpenGL) as part of a computer vision system to track objects in video. Designed and developed a web-based mobile mapping system.

## TECHNICAL SKILLS

**Programming:** Proficient in Objective-C (for Mac OS X and iOS) and Java (for Windows and Mac OS X), using the Xcode and Eclipse environments. Expertise with object-oriented design. Experience with Python, C++, JavaScript, and PHP.

**Design:** Experience with graphic design for print and screen, using Adobe Illustrator and Photoshop.

## TEACHING

### **Cognitive Science 102B: Distributed Cognition**

*Teaching Assistant, Winter 2012*

### **Cognitive Science 102C: Cognitive Design Studio**

*Teaching Assistant, Spring 2011*

### **Cognitive Science 11: Minds and Brains**

*Teaching Assistant, Winter 2010*

### **Cognitive Science 101A: Sensation and Perception**

*Teaching Assistant, Winter 2009*

### **Cognitive Science 101B: Memory and Learning**

*Teaching Assistant, Winter 2008*

## ADVISING

### **Undergraduate Honors Thesis Committee**

Nastasha Tan, 2010 (UCSD Cognitive Science)

Brendan Jonesrebandt, 2010 (UCSD Cognitive Science)

## SELECTED PUBLICATIONS

2012

Weibel, N., Fouse, A., Emmenegger, C., Friedman, W., and Hutchins, E. "Digital Pen and Paper Practices in Observational Research," in Proceedings of CHI 2012, ACM Conference on Human Factors in Computing Systems, Austin, TX, USA, May 2012.

Weibel, N., Fouse, A., Emmenegger, Kimmich, S., and Hutchins, E. "Let's look at the Cockpit: Exploring Mobile Eye-Tracking for Observational Research on the Flight Deck," in Proceedings of ETRA 2012, ACM Symposium on Eye Tracking Research and Applications, Santa Barbara, USA, March 2012.

2011

Fouse, A. and Hollan, J. "Visualization of exploratory video analysis." Proceedings of IEEE Symposium on Information Visualization, Poster Session, October 2011.

Fouse, A., Weibel, N., Hutchins, E., and Hollan, J., "ChronoViz: A system for supporting navigation of time-coded data," Extended proceedings of CHI 2011, SIGCHI Conference on Human Factors in Computing Systems: Interactivity Track, Vancouver, Canada, May 2011

Weibel, N., Fouse, A., Hutchins, E., and Hollan, J. "Supporting An Integrated Paper-Digital Workflow for Observational Research," In Proceedings of IUI 2011, International Conference on Intelligent User Interfaces, Stanford University, Palo Alto, CA, February 2011

2010

Fouse, A., and Hollan, J. "DataPrism: A Tool for Visualizing Multimodal Data," In Proceedings of Measuring Behavior 2010: 7th International Conference on Methods and Techniques in Behavioral Research, Eindhoven, The Netherlands, 2010.

Lewis, J., Fouse, A., de Sa, V. "Cross-Modal Influence on Binocular Rivalry." In S. Ohlsson and R. Catrambone (Eds.), Proceedings of the 32nd Annual Conference of the Cognitive Science Society, pp. 718-723, August 2010.

2009

Bisantz, A., Stone, R., Pfautz, J., Fouse, A., Farry, M., Roth, E., Nagy, A., and Daniels, G. (2009). "Visual Representation of Meta-Information," *Journal of Cognitive Engineering and Decision Making*, 3(1), pp. 67-91.

2007

Pfautz, J., Fouse, A., Farry, M., Bisantz, A., and Roth, E. "Representing Meta-Information to Support C2 Decision Making," in the Proc. of the International Command and Control Research and Technology Symposium (ICCRTS '07), June 19-21, 2007, Newport, Rhode Island.

2006

Fouse, A. and Pfautz, J. "A Novel Approach to Bridging the Gap between Cognitive Engineers and Software System Engineers," Proc. of the Human Factors and Ergonomics Society 50th Annual Meeting, October 16-20 2006, San Francisco, CA.

Pfautz, J., Bisantz, A., Roth, E., Fouse, A., and Nunes, A. "Beyond Uncertainty: Examining Meta-Information Visualization Techniques," Proceedings of SIGGRAPH '06, Poster Session, July 30 - August 3, 2006, Boston, Massachusetts.

Bisantz, A., Pfautz, J., Stone, R., Roth, E., Thomas-Meyers, G., and Fouse, A. "Assessment of Color Variables for Displaying Meta-Information on Maps," Proceedings of the Human Factors and Ergonomics Society 50th Annual Meeting, San Francisco, CA, October 2006.

2005

Pfautz, J., Roth, E., Bisantz, A., Fouse, A., Madden, S., and Fichtl, T. "The Impact of Meta-Information on Decision-Making in Intelligence Operations," Proceedings of the Human Factors and Ergonomics Society 49th Annual Meeting, September 16-20, 2005, Orlando, Florida.

Pfautz, J., Bisantz, A., Roth, E., Fouse, A., and Shuster, K. "Meta-Information Visualization in Geographic Information Systems," Proceedings of the Society for Information Display 2005 International Symposium. Boston, MA.

## HONORS & AWARDS

National Defense Science and Engineering Graduate Fellowship, 2007 - 2010  
Robert J. Glushko and Pamela Samuelson Graduate Fellowship

## PROFESSIONAL MEMBERSHIPS

Association for Computing Machinery (ACM)  
Human Factors and Ergonomics Society (HFES)