Christopher S. Furmanski

Curriculum Vitae

Cuvid Technologies
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Education

- Ph.D., Psychology, UCLA, Los Angeles, CA — *June '01*
  Major: Cognitive Psychology
  Minor: Human Functional Neuroimaging (Individualized minor)
  Advisor: Dr. Stephen A. Engel
  Thesis: Characterization of orientation sensitivity in the human visual system.
- M.A., Psychology, UCLA, Los Angeles, CA — *Dec '96*
  Thesis: Perceptual learning during object recognition.
- B.S., Psychobiology, UCLA, Los Angeles, CA — *June '94*

Experience

- Founder and CEO, Cuvid Technologies, Oakland, CA — *Jan '05-present*
- Director of Science, Epoch Innovations, San Francisco, CA — *July '04-Jan '05*
- Research Scientist, Information Sciences Lab, HRL Laboratories, Malibu, CA — *June '00-June '04*
  - -Research Computer Scientist — *Dec '03-Jun '04*
  - -Member of Research Staff — *Feb '03-Dec '03*
  - -Member of Technical Staff — *June '01-Feb '03*
  - -Summer Researcher — *June '00-Dec '00*
- Postdoctoral Fellow, Stephen Engel, UCLA Department of Psychology, Los Angeles, CA — *June '01-Dec '02*
- McDonnell-Pew Summer Institute in Cognitive Neuroscience attendee, Dartmouth College, NH — *June '98-July '98*
- Graduate Student Researcher, UCLA Department of Psychology, Los Angeles, CA — *Sept '96-June '01*
- Teaching Assistant, UCLA Department of Psychology, Los Angeles, CA — *Sept '96-June '99*
- Summer Researcher, Brian Wandell, Stephen Engel, Stanford University Dept. of Psych., Palo Alto, CA — *July '95-Sept '95*
- Research Assistant, Nancy Kanwisher, Harvard University Department of Psychology, Cambridge, MA — *Aug '94-May '95*
- Undergraduate Researcher, John Hummel, UCLA Department of Psychology, Los Angeles, CA — *Jan '92-June '94*

Peer-reviewed publications

- Azuma, R, Daily, M., and **Furmanski, C.** (2006). A Review of Time Critical Decision Making Models and Human Cognitive Processes. Proc. 2006 IEEE Aerospace Conference (Big Sky, MT, 4-11 March 2006).
- Azuma, R., Fox, J., and **Furmanski, C.** (2005). Evaluating Visualization Modes for Closely-Spaced Parallel Approaches. Proc. HFES 49th Annual Meeting (Orlando, FL, 26-30 Sept. 2005), pp. 35-39.
- Tinker, P, Fox, J, Green, C, Rome, D., Casey, K, and **Furmanski, C.** (2005). Analogical and Case-Based Reasoning for Predicting Satellite Task Schedulability. H. Muñoz-Avila and F. Ricci (Eds.): ICCBR 2005,. 3620, pp. 566–578, 2005. © Springer-Verlag Berlin Heidelberg 2005. Héctor Muñoz-Avila, Francesco Ricci (Eds.): Case-Based Reasoning, Research and Development, 6th International Conference, on Case-Based Reasoning, ICCBR 2005, Chicago, IL, USA,
- **Furmanski, C**, Schluppeck, D, and Engel, S. (2004). Learning strengthens the response of primary visual cortex to simple patterns. *Current Biology,* 14, pp. 573-578.
- **Furmanski, C**, Payton, D, and Daily, M. (2004). Quantitative evaluation methodology for dynamic, web-based collaboration tools. *Proceedings of the Hawaiian International Conference on System Sciences 2004*.
- Azuma, R, and **Furmanski, C**, (2003). Evaluating Label Placement for Augmented Reality View Management. *International Symposium on Mixed and Augmented Reality 2003,* pp. 66-75.
- **Furmanski, C**, Azuma, R, and Daily, M (2002). Augmented-reality visualizations guided by cognition: Perceptual heuristics for combining visible and invisible information. *Proceedings of the International Symposium on Mixed and Augmented Reality*. IEEE Computer Society Press, pp. 215-224.
- Engel, SA and **Furmanski, CS** (2001). Selective adaptation to color contrast in human primary visual cortex. *Journal of Neuroscience,* 21(11), pp. 3949-3954.
- **Furmanski, CS** and Engel, SA (2000). An oblique effect in human primary visual cortex. *Nature Neuroscience.* 3(6), pp. 535-536.

- **Furmanski, CS** and Engel, SA (2000). Perceptual learning in object recognition: Object specificity and size invariance. *Vision Research*. 40(5), pp. 473-484.
- **Furmanski, CS** (2000). Brain imaging made easy. *UCLA Graduate Science Journal*. 1(1), p. 77-81.
- Eldridge, LL, Knowlton, BG, **Furmanski, CS**, Bookheimer, SY, and Engel, SA (2000). Remembering Episodes: The selective role of hippocampus in episodic memory. *Nature Neuroscience,* 3(11), pp. 1149-1152.
- Kammer, T, Saleh, F, Oepen G, Manschreck T, Seyyedi S, Kanwisher N, **Furmanski C**, and Spitzer M (1998). Repetition blindness in schizophrenic patients. *European Archives of Psychiatry and Clinical Neuroscience*. 248(3), pp. 136-140.

Professional Research Project History

- PI, *Intelligent Intelligence, Surveillance, & Reconnaissance Planning*, IR&D, Raytheon *Jan '04-June '04*
- PI, *Integration with Analogical Reasoning Architectures (Seedling*) DARPA IPTO InCog, John Salasin *Nov '03-June '04*
- PI, *Adaptive Reasoning Technology*, IR&D, Shared Research, HRL, Boeing, Raytheon, GM *Aug '03-Dec '03*
- *Time-Critical Collaborative Situational Awareness.* IR&D, Boeing *Jan '03-Dec '03*
- *Intelligent Agents for Situation Understanding*, IR&D, Raytheon *Jan '03-Dex '03*
- PI, *Rapid Reacquisition of Situational Awareness.* IR&D, Shared, Boeing, Raytheon, GM *Jan '02-Dec '03*
- Co-PI, *Advanced Air Traffic Management*. IR&D, Raytheon *Jan '02-June '04*
- *Augmented Reality Visualization and Tracking.* IR&D, Shared Research, HRL, Boeing, Raytheon, GM *Jan '02-Dec '03*
- *Multi-Modal Transparency Visualization,* Shared Research, HRL, Boeing, Raytheon, GM *Jan '02-Dec '03*
- *Human Pattern Extraction.* . IR&D, Shared Research, HRL, Boeing, Raytheon, GM *Jan '02-Dec '02*
- Led evaluation of web collaboration tool, *PackHunter*. DARPA IC&V, Jean Shultz (NIST) *June '01-Dec '01*

Honors & Awards

- 3 HRL Paper Awards ($450), HRL *'02, '04, '04*
- UCLA Dissertation Award ($19,500), Graduate-Division, UCLA (Department rank: 1) *Sept '00-June '01*
- Dissertation-Year Fellowship ($15,500), Department of Psychology, UCLA (declined) *Sept '00-June '01*
- Office of the President Research-Mentor Fellowship ($18,000), Graduate Division, UCLA *Sept '98-June '99*
- Research Travel Award ($750), Department of Psychology, UCLA *Sept '98-June '99*
- University Fellowship ($14,500), College of Letters and Science, UCLA *Sept '95-June '96*

Invited Talks

- DAPRA IPTO, Next-Generation Unifying Agent Architectures SBIR Kickoff, University of Central Florida Institute for Simulation and Training, LCDR Dylan Schmorrow *6/26/2003*
  Developing Next-Generation Reasoning Agents.
- Salk Institute, Systems Neuroscience, Geoff Boynton. *4/13/2001*
  Constraining models of vision: What fMRI of striate cortex can tell us about the mechanisms of perception.
- Caltech, Department of Biology, Richard Andersen. *3/19/2001*
  Constraining models of vision: What fMRI of striate cortex can tell us about the mechanisms of perception.
- University of California, Berkeley, Program in Vision Science, Ralph Freeman. *2/28/2001*
  Constraining models of vision: What fMRI of striate cortex can tell us about the mechanisms of perception.
- University of California, Irvine, Cognitive Science Department, . *2/21/2001*
  Constraining models of vision: What fMRI of striate cortex can tell us about the mechanisms of perception.
- University of California, Los Angeles, Department of Psychology. *2/18/2000*
  Human orientation sensitivity.
- University of California, Los Angeles, Human Brain Mapping Division. *6/4/1997*
  Perceptual learning during object recognition.

Industry Reports

- **Furmanski, C,** and Fox, J. (2004). Integration with Analogical Reasoning Architectures, DARPA IPTO seedling final report.
- **Furmanski, C,** and Fox, J. (2003). Adaptive Reasoning Technology, Shared Research Final Report.
- **Furmanski, C,** and Fox, J. (2002, 2003). Rapid Reacquisition of Situational Awareness, Shared Research Final Report.
- **Furmanski, C,** Payton, D, and Daily, M (2002). Evaluating PackHunter – A history-dependent collaboration tool. *Intelligent Collaboration and Visualization: Human-computer symbiotes*. DARPA Final Report.

Conference & Meeting Presentations

- **Furmanski, C**, Payton, D, and Daily, M. (2004). Quantitative evaluation methodology for dynamic, web-based collaboration tools. *Hawaiian International Conference on System Sciences 2004*. Hilo, Hawaii, January 2004.
- Azuma, R, and **Furmanski, C**, (2003). Evaluating Label Placement for Augmented Reality View Management. *International Symposium on Mixed and Augmented Reality 2003*. October 7-9, Tokyo, Japan.
- **Furmanski, C**, Azuma, R, and Daily, M (2002). Augmented-reality visualizations guided by cognition: Perceptual heuristics for combining visible and invisible information. *Proceedings of the International Symposium on Mixed and Augmented Reality*. IEEE Computer Society Press, Sept. 30 - Oct 1, Darmstadt, Germany.
- **Furmanski, CS** and Engel, SA (2002) Perceptual learning leads to increases in V1 Activity. Proceedings of the Society for Neuroscience, 721.3 (Orlando, FL, Nov 2-7,2002).
- **Furmanski, CS** and Engel, SA (2002). Perceptual learning in human primary visual cortex Journal of Vision, 2(7), 75a, http://journalofvision.org/2/7/75/, DOI 10.1167/2.7.75.
- Payton, D, Daily, M, **Furmanski, CS**, Isdale, J, and VanBuer, D. (2001) PackHunter Experimental Evaluation. *DARPA IC&V PI Meeting*.
- **Furmanski, CS**, Krauss, DA, and Engel, SA (2001). Effects of stimulus crowding in human extrastriate cortex. *Society for Neuroscience* (San Diego, CA).
- **Furmanski, CS**, and Engel, SA (2000). Eccentricity affects both human V1 responses and contrast sensitivity. *Society for Neuroscience* (New Orleans, LA).
- Engel, SA, **Furmanski, CS**, and Tong, F (2000). Selective adaptation to orientation and color contrast in human primary visual cortex. *Society for Neuroscience* (New Orleans, LA).
- Eldridge, LL, **Furmanski, CS**, Knowlton, BE, and Engel, SA (2000). A selective role for the hippocampus in episodic retrieval: An event-related fMRI study. *Society for Neuroscience* (New Orleans, LA).
- **Furmanski, CS**, and Engel, SA (1999). fMRI measurements of an oblique effect in human primary visual cortex. *Investigative Ophthalmology & Visual Science,* 40(4), p. S819. (Ft. Lauderdale, FL).
- Bredfeldt, CE, **Furmanski, CS**, and Engel, SA (1999). Different timecourses for activations and deactivations measured with fMRI. *Society for Neuroscience* (Miami, FL).
- Eldridge, LL, **Furmanski, CS**, Knowlton, BE, and Engel, SA (1999). Differential prefrontal activation using the remember-know recognition paradigm: An event-related fMRI study. *Society for Neuroscience* (Miami, FL).
- Engel, SA, and **Furmanski, CS** (1999). Selective adaptation to color contrast in primary visual cortex. *Investigative Ophthalmology & Visual Science,* 40(4), p. S818. (Ft. Lauderdale, FL).
- Engel, SA, **Furmanski, CS**, and Eldridge, LL (1998). Color specific adaptation in human visual areas measured with fMRI. *Society for Neuroscience*, 24, 1397. (Los Angeles, CA).
- Engel, SA, and **Furmanski, CS** (1998). Efficient measurement of contrast response functions using fMRI. *Human Brain Mapping.* (Montreal, Canada).
- **Furmanski, CS** and Engel, SA (1997). Perceptual learning during object recognition. *Investigative Ophthalmology & Visual Science,* 38(4), p. S644. (Ft. Lauderdale, FL).
- Engel, SA, and **Furmanski, CS** (1997). Neural activity in human lateral geniculate nucleus measured with functional MRI. *Investigative Ophthalmology & Visual Science*, 38(4), p. S361. (Ft. Lauderdale, FL).

Journal Reviewer / Referee

- IEEE Systems, Man, and Cybernetics: Ambient Intelligence special issue
- IEEE and ACM International Symposium on Mixed and Augmented Reality
- Network: Computation in Neural Systems
- Journal of Cognitive Neuroscience
- Vision Research

Government / Industry Meetings

- DARPA ACIP Proposal Effort, Cognition and Analogy, Raytheon El Segundo, CA *Jan-March '04*
- DARPA IPTO Next-Generation, Unifying Agent Architecture SBIR Kickoff - Orlando, FL *June 26, '03*
- United States Navy, Chief of Naval Operations, Strategic Studies Group, Concept Generation Team Newport, RI *May 27, '03*
- DARPA IPTO Augmented Cognition PI Meeting – Austin, TX *Dec 18, '01*

Invited Advisor / Consultant

- DARPA IPTO Next-Generation, Unifying Agent Architecture SBIR–- LCDR Dylan Schmorrow *June '03*
- DARPA IPTO Integrated Cognition – Dr. John Salasin *June '03*
- United States Navy, Chief of Naval Operations, Strategic Studies Group, Concept Generation Team - Admiral Hogg - Newport, RI. *May '03*

Professional and Academic Affiliations

- Institute of Electrical and Electronics Engineers (IEEE)
- Vision Sciences Society (VSS)
- Association for Research in Vision and Ophthalmology (ARVO)
- Society for Neuroscience (SFN)

Extracurricular Activities

- Babythoughts Blog *Mar '06-present*
  Created and write blog on cognitive psychology and parenting.
  http://babythoughts.com
- UCLA Graduate Science Journal Founder, Editor *Sept '99-June '00*
  Co-created, edited, and contributed to a publication dedicated to the scientific achievements of UCLA graduate students presented in non-technical language.
  http://www.studentgroups.ucla.edu/gsj/
- UCLA Ultimate Frisbee Team Founder, Captain *Sept '96-June '98*
  Organized and led a new club sports team to collegiate regional playoffs.

Selected Skill Set

- Small (4-8 people) team/lab management
- Experimental design and usability testing for various human-computer interfaces
- Perceptual psychophysics
- Attaining government funding (e.g., DoD/DARPA contracts)
- Technical, science, and lay-English writing
- Data analysis & statistics
- MATLAB, language for Technical Computing
- Cognitive modeling and agent development (e.g., analogical reasoning networks)
- Ethnographic (qualitative and quantitative) user studies (e.g., air traffic controller & web-usage analysis)
- Rapid visualization and low-fidelity play testing
- Functional Magnetic Resonance Imaging experimentation and analysis
- Adobe Suite (Photoshop, Illustrator, Acrobat)
- Macromedia Web Studio (Dreamweaver, Fireworks, Freehand)
- 3DStudio Max
- Microsoft Office
- Multi-platform proficiency: UNIX, Windows NT/ME/2K, Mac 9/X, Linux