

Peter Khooshabeh

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Psychology Department
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Education

University of California (UC), Santa Barbara (3.9 GPA)

Fall 2004-present, Psychology Department with major in Cognition, Perception, and Cognitive Neuroscience

Masters Degree granted in June 2006

PhD expected in 2009 (All But Dissertation, i.e. I can work sooner than June 2009)

Dissertation Title: Mental Rotation: is it based on visuo-spatial or strictly spatial representations?

Advisor: Professor Mary Hegarty, PhD

UC Berkeley, Fall 2000 – Spring 2004. Magna Cum Laude (3.744 GPA)

Major: Cognitive Science. Emphases: Cognitive Psychology and Computational Modeling

Minors: Electrical Engineering and Computer Science (EECS)

Selected Awards/Fellowships:

- Graduate Opportunity Fellowship (May 2008) – dissertation funding for 2008 Academic Year
- Cambridge Who's Who among Executives, Professionals and Entrepreneurs (November 2007)
- Assyrian United Organizations of California, Inc. Scholarship (October 2007)
- Most Distinguished Science Knowledge Contributor – Materials Research Lab (2006-2007)
- Department of Homeland Security Graduate Research Fellow (2004-2008)
- National Science Foundation IGERT Fellow (2004-2006 – declined 2005-2006 fellowship)
- Psi Chi National Honor Society (inducted February 2005)
- Accenture Foundation Scholarship (multi-year recipient 2002-2004)
 - (multi-year recipient 2002-2004)
- Gave research presentation to UC Regents meeting (January 14, 2004)
- UC Leadership and Excellence through Advanced Degrees Scholar (UC LEADS) (multi-year research funding received beginning February, 2002 until May 2004)
- Distinguished UC Berkeley Alumni Leadership Scholar for Santa Clara County (2000-2004)
- Golden Key International Honor Society Top Junior Scholar Inductee (May 2003)
- 2002 Nisibin Scholar of the Greater Bay Area
- Student Life Achievement Award, Educational Opportunities Program (2001)
- Three time scholarship recipient from Assyrian Foundation of America (2000-2003)
- Gates Millennium Scholarship Candidate (2000)

Professional Experience

Graduate Student Researcher: UCSB Psychology Department: Small Scale Spatial Cognition (medical visualization, weather maps, and mental rotation)

(Fall 2004 – present) Mentors: Mary Hegarty, Dan Montello

Project Title: NSF ITR: 3-D Visualizations for Medical Education

- Dissertation studies individual differences in cognitive style for performing spatial transformations in multimedia.
- Mining eyetracking and video data to analyze strategies for effective media use to solve problems with visual and spatial media
- Supervised several research assistants and directed projects to successful completion.

Researcher: Air Force Research Laboratory, (summer 2008), Mesa, AZ

Project Title: Cognitive Modeling of Human Spatial Competence; Mentor: Dr. Glenn Gunzelmann

- Conducted novel analysis of eye fixation data using finite state machines to generate grammars. Modified computational cognitive model to show learning of a spatial decision making task.

Researcher: Lawrence Livermore National Laboratory, (ongoing), Livermore, CA

Project Title: Dynamic Network Assessment; Mentor: Tony Farmer

- Social Network Analysis pertaining to the visualization of topological and spatial relationships; conducted pilot experiments related to expertise and cognitive psychology; Network science product development for counterterrorism analysts; conducted cognitive walkthrough summative and formative evaluation

Researcher: IBM Almaden Research Center, USER Group (Summer 2005), San Jose, CA

- Design and evaluate policy-based interfaces for Autonomic Computing. Conduct experiments to study the mental representation of system users.
- Mentors: Eser Kandogan, Paul Maglio

Researcher: NASA Ames Research Center, Human Factors Division (Summer 2004)

- Advanced Displays and Spatial Perception Laboratory: Implemented and conducted a study for an interface to augment Mars Exploration Rover and other teleoperated machinery. Mentors: Steve Ellis, Bernard D. Adelstein

Research Assistant: UC Berkeley EECS Department, Division of Computer Science: Prototyping and Evaluating Human-Machine Interfaces (Fall 2001 – Spring 2004).

- Group for User Interface Research: Developed and Designed for the DENIM system. Extended functionality for designers to prototype websites for mobile devices. Also implemented scrollbar functionality and conducted evaluation. Mentors: Professor James Landay, Jimmy Lin, Jason Hong*
- Semester project with Context Aware Computing Research: Designed, Deployed, and Evaluated a Prototype of Context Aware Kitchen Inventory System called Kitchen-Net (Abstract in EECS Research Summary for 2003). Mentors: Professors James Landay and Anind Dey, Anoop Sinha, Xiaodong Jiang*
- Virtual Environments for Surgical Training and Augmentation (Jointly with UCSF) – Medical Education for Ultrasound Imaging. Implementing and evaluating various interaction techniques. Professor Frank Tendick. **
 - o Funding by UC San Francisco's (UCSF) Summer Research Training Program** and UC LEADS*.

Refereed Publications

- Hegarty, M., Keehner, M., **Khooshabeh, P.**, & Montello, D. R. (2008). How Spatial Abilities Enhance, and are Enhanced by, Dental Education. *Learning and Individual Differences*.
- Keehner, M., Hegarty, M., Cohen, C., **Khooshabeh, P.** and Montello, D.R. (2008). Spatial Reasoning With External Visualizations: What Matters Is What You See, Not Whether You Interact. *Cognitive Science*.
- Keehner, M., **Khooshabeh, P.** and Hegarty, M. (2008) Interactive visualizations and individual differences among users. in F. Dong, Ghinea, G. and ., S.Y.C. eds. *User centered design for medical visualization*, Idea Group Inc., Hershey, PA.

Refereed Conference Publications

- Khooshabeh, P.**, & Hegarty, M. (2008). *Differential Effects of Color on Mental Rotation as a Function of Spatial Ability*. Paper presented at the International Spatial Cognition Conference, Freiburg, Germany.
- Gunzelmann, G., Douglass, S., & **Khooshabeh, P.** (2008). *Learning to Orient Using a Map Display: Evidence from Eye Tracking*. Paper presented at the International Spatial Cognition Conference, Freiburg, Germany.
- Khooshabeh, P.** (2008), *Understanding the Information Content of 3-D Shapes During Mental Rotation*, presented at International Spatial Cognition Conference (Doctoral Colloquium), Freiburg, Germany.
- Khooshabeh, P.** and Hegarty, M. (2008) *How Visual Information Affects a Spatial Task*. presented at Proceedings of Cognitive Science Society, Washington, DC.
- Khooshabeh, P.**, Hegarty, M., Keehner, M., and Cohen, C. (2008). *Benefits of Constrained Interactivity in Using a Three-Dimensional Diagram*, Diagrams 2008, Hersching, Germany, vol. Lecture Notes in Artificial Intelligence 5223, pp. 385–387.
- Kandogan, E., Campbell, C., **Khooshabeh, P.**, Maglio, P., Bailey, J. (2006). *Policy-based Management of an E-commerce Business Simulation: An Experimental Study*. Submitted to Cluster Computing Journal. The work was also presented at the IEEE International Conference on Autonomic Computing, Dublin, Ireland, which had less than a 20% acceptance rating.
- Khooshabeh, P.**, Smith, E., Thompson, J. (2005). *Gestural Musical Improvisation and Programming*. Paper presented at the IEEE Visual Languages and Human Centered Computing, Dallas, Texas.
- Keehner, M., **Khooshabeh, P.** (2005, March 21-24). *Computerized Representations of 3D Structure: How Patterns of Interactivity Differ Among Learners*. Paper presented at the American Association of Artificial Intelligence, Stanford, CA.
- Heer, J., **Khooshabeh, P.** (2004, May 25-28). *Seeing the Invisible*. Paper presented at the Advanced Visual Interfaces, Lecce, Italy.
- Liu, L., **Khooshabeh, P.** (2003, April 5-10). *Paper or Interactive? A Study of Prototyping Techniques for Ubiquitous Computing Environments*. Paper presented at the Human Factors in Computing Systems: SIGCHI 2003, Ft. Lauderdale, Florida.

Under Review

- Khooshabeh, P.** and Hegarty, M. (2008). Inferring Cross-Sections: When Internal Visualizations are More Important than Properties of External Visualizations, *Submitted*.
- Khooshabeh, P.** Assyrian Predicament and the Iran-Iraq War. *Journal of Assyrian Academic Studies*.

Abstracts and Posters (with presentations):

- Hegarty, M., Keehner, M., Cohen, C., **Khooshabeh, P.** and Montello, D.R., Spatial thinking with external visualizations: The role of individual differences. in *European Association for Research on Learning and Instruction (Earli)*, (Budapest, Hungary, 2007).

- Keehner, M., Hegarty, M., Cohen, C. and **Khooshabeh, P.**, Reasoning with interactive visualizations: The importance of individual differences among users. in *European Association for Research on Learning and Instruction (Earli)*, (Budapest, Hungary, 2007).
- Khooshabeh, P.**, Villacorta, A. Interdisciplinary Research and Diversity in Higher Education. University of California Systemwide Meeting on Changing the Culture of Academia. March 2007
- Khooshabeh, P.**, Hegarty, M. (2006). *The Effect of Depth Information on Inferring Cross-sections*. Paper presented at the Cognitive Science Society, Vancouver, BC.
- Keehner, M., Cohen, C., Montello D., **Khooshabeh, P.**, & Hegarty, M. (2005). *Is Active Control Better Than Passive Viewing? It Depends On What You See*. Paper presented at the Psychonomic Society, Toronto, Canada.
- Khooshabeh, P.** (2005). Virtual environments for medical training, *Invited talk at the Stanford Youth Medical Science Program*. Stanford, CA.
- Khooshabeh, P.** (2005). Cognitive Science Perspectives on Medical Education, *Invited talk at the University of California Graduate Student Symposium*. Santa Barbara.
- Hegarty, M., Keehner, M., Cohen, C., **Khooshabeh, P.** (2005). Role of Spatial Cognition in Medicine, *Invited talk at the Stanford University Medical Media and Information Technology Group*.
- Khooshabeh et al.** (2005, January 26-29). *How Learners Comprehend and Interact with 3D Computerized Representations of Anatomy-Like Structures*. Paper presented at the Medicine Meets Virtual Reality Conference, Long Beach, California.
- Khooshabeh, P.** (2002, September 27-29). *Exploring the Benefits of Navigational Widgets in DENIM*. Paper presented at the Society for the Advancement of Chicanos and Native Americans in Science (SACNAS) 29th Annual National Conference, Anaheim, California.
- Khooshabeh, P.** (2002). *Exploring the Benefits of Navigational Widgets in DENIM*. Paper presented at the UCSF Health and Biomedical Sciences Colloquium, San Francisco, CA.
- Khooshabeh, P.** (2002). *Exploring the Benefits of Navigational Widgets in DENIM*. Paper presented at the UC LEADS Symposium, San Diego, CA.
- Khooshabeh, P.** (2003, October 1-5). *Medical Education through Simulation Training*. Poster presented at SACNAS 30th Annual National Conference, Albuquerque, New Mexico.
- Khooshabeh, P.** (2003). *Medical Education through Simulation Training*. Poster presented at the UCSF Health and Biomedical Sciences Colloquium, San Francisco, CA.
- Khooshabeh, P.** (2003). *Medical Education through Simulation Training*. Poster presented at the UC LEADS Symposium, Los Angeles, CA.
- Khooshabeh, P.** (2003). *Medical Education through Simulation Training*. Poster presented at the UC Berkeley Engineering and Science Poster Session, Berkeley, CA.

Invited Talks:

- Khooshabeh, P.** (2008). Information Content in Mental Representations of 3-D Objects. *National Visualization and Analytics Center, Pacific Northwest National Lab, Richland, WA*.
- Khooshabeh, P.**, & Hegarty, M. (2007). The Role of Interfaces and Individual Differences in Inferring Cross-Sections. IBM, Almaden Research Center: User Science Experience Research (USER) Seminar.

Unpublished work:

- Khooshabeh, P.** (2004). *Learning Spatial Relationships: Ethnography and Experiment of an Echographic Training Simulation*. Unpublished Undergraduate Honors Thesis, Primary Reader: Professor Richard Ivry. Secondary Reader: Professor Frank Tendick, University of California, Berkeley.
- Khooshabeh, P.** (2006) *Quality of Information: Mental Representations of Small Scale Space*. Unpublished

Masters Thesis, Primary Reader: Mary Hegarty. Secondary Reader: Jack Loomis. University of California, Santa Barbara

Extracurricular Activities

<i>Founding Co-President</i>	Alliance for Graduate Education and the Professoriate (AGEP) Student Society	June 2007
<i>Executive Council Member; Chair of Evaluation Committee</i>	Department of Homeland Security Student and Alumni Network	Fall 2006 - present
<i>Graduate Representative</i>	Information Technology and Telecommunication Policy UC Systemwide Academic Senate Committee	Fall 2006 – present
<i>Paper Reviewer</i>	Human Factors and Ergonomics Society. Virtual Environments, Individual Differences, Perception and Performance Technical Groups	Winter 2006 - present
<i>UC Santa Barbara Representative</i>	American Psychological Association of Graduate Students Committee on Ethnic Minority Affairs	Summer 2005 - present
<i>Invited Panelist</i>	Expectations of First Year Graduate Students in the Information Sciences, UC LEADS Conference UCSF	March 2005
<i>Musician</i>	UC Santa Barbara Middle East Ensemble	Fall 2004 - present
<i>Reviewer</i>	American Psychological Society Student Grant Competition	Fall 2004 - present
<i>Co-founder</i>	Chaldo Assyrian Student Alliance at UCSB	Fall 2004 - present
<i>Graduate Executive Committee Representative</i>	UCSB Psychology Department	Fall 2004 - present
<i>Consultant</i>	Maclise Think Tank (UC Merced)	November 2004
<i>Assistant Faculty</i>	Berkeley Foundation for Opportunities in Information Technology: Summer Computer Science Institute	Summer 2003 - present
<i>Co-founder</i>	Assyrian Student Alliance	Fall 2000 - present
<i>Co-founder</i>	Nisan Recruitment and Retention Center	Fall 2002 - present
<i>Webmaster</i>	Center for Underrepresented Engineering Students (CUES)	Fall 2000 - present
<i>Mentor</i>	We're Going to Cal, California Alumni Association Outreach	Fall 2000 - present

Undergraduate Liaison, Innovator's Challenge Co-Chair VERTEX: Engineering Entrepreneurial Club Fall 2002 - present

Mentor Computer Science Undergraduate Association Fall 2002 - present

Teaching: Student Instructor. Human Memory Research Methods, Winter 2006; Introduction to Cognitive Science, UC Berkeley Fall 2003

National Conference Attendance

- Student volunteer (SV) at IEEE and ACM International Symposium on Mixed and Augmented Reality
- SV at Association for Computing Machinery (ACM) Special Interested Group for Computer Human Interaction (SIGCHI) 2003 Ft. Lauderdale Florida
- SV at Designing the User Experience (DUX) 2003 (Co-sponsored by ACM SIGCHI and SIGGRAPH – computer graphics interest group)
- Fully funded to attend both SACNAS 2002, 2003. I also presented, see above.
- Fully funded to attend IEEE VL/HCC. I also presented at the Doctoral Consortium.

Other Skills

- Programming languages: Scheme (a dialect of LISP), Java, Python, MATLAB. Knowledge of C++
- Fluent in speaking, reading, and writing Assyrian (Neo-Aramaic), Farsi, Spanish. Working knowledge of Arabic

Research Assistants and Other Students Advised

- Rachel Avenassian, UCSB BA in Psychology, currently at SFSU School Psychology Masters Program
- Ethan Smith, UCSB BA in Computer Science and Psychology. MS University College London, Currently Lead User Interface Designer at Wize
- Maurice Grayson (BFOIT), Emery High School, now attending UC Berkeley
- Alan Young (BFOIT), Cupertino High School, now attending UC Berkeley, EECS
- David Herschorn Research Mentoring Program and Research Assistant (June through March 2008 as a high school student). Now undergraduate at UC Berkeley
- Amanda Baratz, Research Mentoring Program (June through August 2007 as a high school student). Now undergraduate at UCLA