Barbara Hidalgo-Sotelo

EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, *Cambridge MA*

September 2010   **PhD in Cognitive Science (minor in Computation)**
Dissertation Advisor: Aude Oliva

UNIVERSITY OF TEXAS AT AUSTIN, *Austin TX*

May 2003   **BS in Electrical Engineering**
BS in Biology (concentration in Neurobiology)

RESEARCH INTERESTS

When performing natural tasks in real world contexts, people move their eye gaze several times per second, for example when scanning a webpage for a desired link, looking for a familiar face in the crowd, or checking a crosswalk for pedestrians.

Where the eyes are looking and **how long** they linger in a particular spot are naturally occurring behaviors that can indicate which scene regions are visually or cognitively salient.

- My broad area of interest is to understand how people combine bottom-up visual information and top-down scene knowledge to selectively deploy the eyes during natural tasks, e.g. visual search, learning & memory.

- Specifically, **how does *context-specific* learning** (e.g. the familiar layout of one's bedroom or TV remote control) **influence spatial and temporal characteristics of attentional processing.**

- Modeling individual differences in search behavior and using those models to enhance visual exploration of familiar contexts - **Can computational models learn person-specific eye movement parameters and predict what regions of a scene or visual display will attract a person's attention?**

FELLOWSHIPS

National Eye Institute Training Program in Vision, *MIT*	*2009-2010*
Singleton Scholar, *MIT*	*2008-2009*
Graduate Research Fellowship, *National Science Foundation*	*2005-2008*
Picower-Leventhal Presidential Graduate Fellowship, *MIT*	*2004-2005*

PUBLICATIONS

Hidalgo-Sotelo, B. & Oliva, A. (2010). Person, place, and past influence eye movements during visual search. *In S. Ohlsson & R. Catrambone (Eds.), Proceedings of the 32nd Annual Conference of the Cognitive Science Society,* (pp. 820-825). Austin, TX: Cognitive Science Society.

Ehinger, K.*, **Hidalgo-Sotelo, B. ***, Torralba, A. & Oliva, A. (2009). Modeling Search for People in 900 Scenes: A combined source model of eye guidance. *Visual Cognition*, 17(6): 945-978.

Rich, A., Kunar M., VanWert M., **Hidalgo-Sotelo B.**, Horowitz T., & Wolfe J. (2008). Why do we miss rare targets? Exploring the boundaries of the low prevalence effect. *Journal of Vision,* 8(15):15, 1-17.

Hidalgo-Sotelo B., Oliva A.,& Torralba A. (2005). Human Learning of Contextual Priors for Object Search: Where does the time go? Proceedings of the 3rd *Workshop on Attention and Performance at CVPR.* Washington, DC: IEEE Computer Society.

POSTERS

Hidalgo-Sotelo, B., & Oliva, A. (August 2010). Person, place, and past influence eye movments during visual search. *Cognitive Science Society Annual Meeting*, Portland OR.

Hidalgo-Sotelo, B., & Oliva, A. (May 2010). History repeats itself: A role for observer-dependent scene context in search. *Vision Sciences Society Annual Meeting*, Naples FL.

Hidalgo-Sotelo, B., & Oliva, A. (May 2008). Delaying initial saccade latency in familiar scenes improves search guidance. Tufts Conference on *Cognitive Neuroscience of Visual Knowledge: Where vision meets memory*. Boston MA.

Hidalgo-Sotelo, B., & Oliva, A. (May 2008). Look before you leap: Lengthening initial saccade latency in familiar scenes improves search guidance. *Vision Sciences Society Annual Meeting*, Naples FL.

Rich, A., Kunar, M., Van Wert, M., Hidalgo-Sotelo, B., & Wolfe, J. (May 2007). Do rare features pop out? Exploring the boundaries of the low prevalence effect. *Vision Sciences Society Annual Meeting*, Sarasota FL.

Hidalgo-Sotelo, B., & Oliva, A. (May 2006). Decomposing the effect of contextual priors in search: Where does the time go? *Vision Sciences Society Annual Meeting*, Sarasota FL.

Rich, A. N., Hidalgo-Sotelo, B., Kunar, M. A., Van Wert, M. J., & Wolfe, J. M. (May 2006). What happens during search for rare targets? Eye movements in low prevalence visual search. *Vision Sciences Society Annual Meeting*, Sarasota FL.

Kenner N., Hidalgo-Sotelo B., & Oliva A .(May 2005). Rapid Goal-Directed Exploration of a Scene: The Interaction of Contextual Guidance and Salience. *Vision Sciences Society Annual Meeting*, Sarasota FL.

PRESENTATIONS

"Visual scanning of natural scenes in schizophrenia: Effect of a task-driven exploration and scene semantic consistency." Boloix, E., Delerue, C., Hidalgo-Sotelo, B., & Boucart M. Talk presented by Emmanuelle Boloix at *9th World Congress of Biological Psychiatry*, Paris, France. July, 2009.

"Modeling visual search in a thousand scenes: The roles of saliency, target features, and scene context" Ehinger, K., Hidalgo-Sotelo, B., Torralba, A. & Oliva, A. Talk presented by Krista Ehinger at the *Vision Sciences Society Annual Meeting*, Naples FL. May, 2009.

 "Gaze and the time-course of memory-guided visual search in real world scenes" Presentation to the Department of Brain and Cognitive Sciences at Cognitive Lunch, MIT. April, 2008.

"Retrieving scene identity priors enhances visual search speed" Presentation at the *Visual Attention Seminar*, PI: Jeremy Wolfe, Cambridge MA. November, 2006.

"Watching you Learn: What eye movements reveal about context-based performance" Presentation to the Department of Brain and Cognitive Sciences at Cognitive Lunch, MIT. October, 2006.

"Human Learning of Contextual Priors for Object Search: Where does the time go?" Talk at the *3rd Workshop on Attention and Performance at the Conference in Computer Vision and Pattern Recognition (CVPR)*, San Diego CA. June, 2005.

"Pinpointing where contextual knowledge benefits visual search in familiar real world scenes" Presentation at the Visual Attention Seminar, PI: Jeremy Wolfe, Cambridge MA. May, 2005.

OTHER EXPERIENCE

Teaching Assistantships   **MIT Brain and Cognitive Sciences**

- Head TA for *Cognitive Processes,* Spring 2008   Professor Molly Potter
- Head TA for *Introduction to Psychology*, Spring 2007   Professor John Gabrieli
- TA for *Introduction to Psychology*, TA, Spring 2006   Professor Jeremy Wolfe

Bioinformatics Research Assistant   **Gutell Lab, UT Austin**

Used computational biology tools to maintain large databases of ribosomal RNA sequences, and predict rRNA folding structure from phylogenetic relationships and comparative analysis. (July 2004 - June 2003)

English as a Second Language (ESL) Instructor   **Literacy Austin**

Planned and taught an ESL class, 1 hour class twice a week, to individuals in the Austin Community. (July 2004 - June 2003)

Program Coordinator for Young Scientists   **Ortega Elementary**

Coordinated a school program delivering mentoring and tutoring services to a class of twenty 5th grade students at a local elementary school by UT Austin students in the Dean's Scholars honors program. (May 2002 - August 2000)

SKILLS

- Eyetracking systems: equipment set-up, data collection and analysis, troubleshooting
- Programming*: Matlab/Psychtoolbox, C, HTML5, CSS
- Software*: Matlab, SPSS, MS Word, Excel, PowerPoint, Eclipse IDE, Adobe Photoshop
- OS*: Windows, Mac OSX, various flavors of Linux

PROFESSIONAL ORGANIZATIONS

Vision Sciences Society

Cognitive Science Society

American Psychological Society (APS)