



# GABRIEL DIAZ

DOCTORAL STUDENT

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## Education

Skidmore College, Saratoga Springs, New York - B.A. with a concentration in Psychology, 2004.

Rensselaer Polytechnic Institute, Troy, New York - Cognitive Science, Master of Science completed in 2008, Doctor of Philosophy expected in 2010.

University of the Mediterranean, Marseille, France - Assisted in the formation of an international collaborative research project. This project explores the link between risky driving behavior and affordance perception when overtaking (passing) a lead vehicle. November 2008.

## Presentations

### Vision Sciences, Sarasota, Florida - 2004

Presented a Senior Thesis: Temporal Recognition of Objects at Low Contrast. Research was conducted while working in the Eye Brain Vision Cognitive Science Laboratory under the guidance of Flip Phillips, Ph.D.

### Vision Sciences, Sarasota, Florida - 2005

Presented, "Visual control of braking behind a moving lead vehicle." Previous research on visually guided braking has focused on avoiding collisions with stationary objects in the path of motion. I extended the investigation of braking to the situation of decelerating behind a lead vehicle moving at a constant speed.

### Issues in Cognitive Science, Rensselaer Polytechnic Institute, Troy, NY - 2005

Presented research upon the visual control of braking behind a moving lead vehicle to RPI's Department of Cognitive Science.

### Vision Sciences, Sarasota, Florida - 2006

Presented, "Flexible Attunement to Different Optical Variables in Visually Guided Action." My research suggests that, when presented with redundant sources of visual information, the visual system learns to attend to those cues that are most reliable.



### **Issues in Cognitive Science, Rensselaer Polytechnic Institute, Troy, NY - 2006**

Presented research upon the locomotor interception of unpredictable moving targets.

### **Vision Sciences, Sarasota, Florida - 2007**

Presented, "Locomotor Interception of Unpredictable Moving Targets" In this study, subjects used a foot-pedal to intercept targets that change speeds in ways that are locally unpredictable, but exhibit some global statistical regularities. Subjects demonstrated accurate anticipation of the most probable change in target speed in a way that challenges the ecological interception strategies and, more broadly, the concept of direct perception.

### **Issues in Cognitive Science, Rensselaer Polytechnic Institute, Troy, NY - April 2008**

I presented my research upon human strategies for the locomotor interception of unpredictable moving targets. This includes empirical investigations, as well as a computational model introducing a novel framework for the explanation of anticipation in visually guided actions.

### **Vision Sciences, Sarasota, Florida - May 2008**

I presented a computational model of anticipation in visually guided action.

### **Vision Sciences, Sarasota, Florida - May 2009**

Presented an ongoing investigation on the information that allows humans to anticipate the outcomes of observed actions, in this case, a penalty kick in soccer. I hypothesize that judgments are made on the basis of information in the kicker's approach, and that increases in accuracy result from a shift towards more reliable information. Principle components analysis is applied to motion-data to isolate patterns of motor coordination that are distributed across the kicker's body and the duration of the approach to the ball. My analysis focuses on the relationship between subject's judgments of kick direction and these extracted patterns of motor coordination.

## **Publications**

### **Conference Abstracts**

Diaz, GJ, & Phillips, F (2004). *Evidence for a new mechanism in long time-course low contrast object recognition.* Journal of Vision, 4(8), 523a.

Diaz, GJ, & Fajen, BR (2005). *Visual control of braking behind a moving lead vehicle.* Journal of Vision, 5(8), 317a.

Diaz, GJ, & Fajen, BR (2006). *Flexible attunement to different optical variables in visually guided action.* Journal of Vision, 6(6):138a.

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Diaz, GJ, & Fajen, BR (2007). *Locomotor Interception of Unpredictable Moving Targets*.  
Journal of Vision, 7(9):144a.

Diaz, GJ, Phillips, F, & Fajen, BR (2008). Intercepting moving targets: A little foresight helps a lot. To be published in Journal of Vision (2009).

#### **Journal Articles**

Fajen, BR, Cramer, C, Diaz, GJ (2009). Observation: Reconsidering the role of movement in perceiving action-scaled affordances. Submitted to the Journal of Experimental Psychology: Human Perception & Performance.

Diaz, GJ, Phillips, F, & Fajen, BR (2009). Intercepting Moving Targets: A little foresight helps a lot. *Experimental Brain Research*, 195(3):345-360.

#### **Awards**

2006: Junior Scientist's Fellowship to aid attendance to the Carnegie Symposium on Cognition: Embodiment, Ego-space, and Action, hosted by Carnegie Mellon University.

2009: Travel award to aid attendance to the International Conference on Vision in 3D Environments, hosted by the Center for Vision Research at York University.

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