



TEXAS TECH UNIVERSITY  
Department of Mechanical Engineering

## ME SEMINAR SERIES IN FALL 2013

# Effects of Size on Collision Perception: Theoretical and Practical Implications

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**Date: November 4, 2013 (Monday)**

**Time: 2:00pm-3:00pm**

**Venue: Livermore 101**

**Abstract:** The creation and avoidance of collisions is common in everyday life. For example, drivers control their cars to avoid collisions with other cars. Batters control their swings to make collisions between the ball and bat. To complete these actions, people rely on judgments of objects' distances (depth perception), and judgments about how much time remains until a collision with an object will occur (time-to-collision). Such judgments are supported by various sources of visual information. Depth cues such as relative size provide heuristics for the relative distances of objects. Optical invariants, such as tau, provide reliable information for time-to-collision. Although it is reasonable to expect people to rely on the more reliable information, empirical results suggest the contrary: People reported that a large far approaching object would hit them sooner than a small near object that would have hit first. This "size-arrival effect" contradicts theories of time-to-collision perception based only on tau. Instead, perception of collision appears to be based on multiple sources of visual information, including heuristics. The size-arrival effect is a potential contributor to drivers' misjudgments of when a vehicle would arrive at an intersection and may account for accidents in which a car violate a motorcycle's right of way. I will discuss research on the size-arrival effect and its theoretical and practical implications.

**Speaker Bio:** Dr. Patricia R. DeLucia is a professor of psychology and the coordinator of the Human Factors Psychology Program at Texas Tech University, and is an adjunct professor in the School of Nursing at Texas Tech University Health Sciences Center. In 2014, she will begin her role as editor-in-chief of the journal *Human Factors*, for which she served as an associate editor since 2009. She also has served on the editorial board of *Journal of Experimental Psychology: Applied*, and as an ad-hoc reviewer for more than 25 other scholarly journals. Dr. DeLucia has more than 60 publications, which includes serving as the editor of the book *Reviews of Human Factors and Ergonomics, Volume 7*. She is a Fellow of the American Psychological Association and the Human Factors and Ergonomics Society. Prior to her appointment at Texas Tech University in 1991, Dr. DeLucia received her Ph.D. from Columbia University and completed a National Research Council postdoctoral fellowship at Wright Patterson Air Force base. Dr. DeLucia's research program focuses on theoretical issues in the visual perception of depth and collision, and human factors issues pertaining to driving and health care. In 2012, she received the Texas Tech University *Barnie E. Rushing, Jr. Faculty Distinguished Research Award*.

