

David A. Krauss, Ph.D.
Principal Scientist

Professional Profile

Dr. David A. Krauss is a Principal Scientist in Exponent's Human Factors practice. Dr. Krauss has specialized knowledge in human perception and cognition, reaction time, attention, the effects of lighting conditions on vision, and how stress affects behavior. He uses this experience to investigate human factors in a wide array of scenarios such as automobile accidents, industrial and occupational accidents, structure fires, and slip-and-fall incidents. Dr. Krauss has investigated accidents associated with industrial safety, motor vehicles, and consumer products, among others.

Dr. Krauss' analysis methods include programming custom image-processing software to quantify visibility and conspicuity for many applications, including product development and recreating accident scenarios. He has also developed, published, and implemented a method to accurately capture and display digital photographs of low-visibility or nighttime accident scenes. Additionally, he performs quantitative injury and risk analyses using large-scale incident and injury data from various sources including the Consumer Product Safety Commission (CPSC), Centers for Disease Control (CDC), Food and Drug Administration (FDA), and manufacturer trade associations.

As part of his consulting practice, Dr. Krauss oversees human-subject testing to assess product usability and to gather user opinions for various products. He incorporates elements of anthropometry, visual assessments, psychophysics, questionnaires and observational techniques to conduct comprehensive evaluations of a variety of consumer and industrial products.

Dr. Krauss' doctoral dissertation addressed human visual perception and reading. His familiarity with the cognitive-psychology literature has been applied to the development of warnings, instructions, and safety information for various products as well as to the assessment of the role of warnings in accidents.

Academic Credentials and Professional Honors

Ph.D., Psychology/Cognitive Neuroscience, University of California, Los Angeles, 2003
M.A., Psychology/Cognitive Neuroscience, University of California, Los Angeles, 2000
B.S., Biopsychology and Cognitive Science, University of Michigan, 1998

Pauley Graduate Fellowship, University of California, Los Angeles (1998)
Undergraduate honors, University of Michigan (1994)

Licenses and Certifications

OSHA-Qualified General Industry Safety Trainer; Certified Forklift Operator

Publications

Todd J, Sala J, Heckman G, Krauss D. Validation of high dynamic range photography as a tool to accurately represent low-illumination scenes. SAE Technical Paper 2012-01-0078, Society for Automotive Engineers, Inc., 2012.

Krauss DA, Todd JJ, Kim R, Scher I. A risk analysis of fall-related injuries using the NEISS database. Proceedings, 55th Annual Meeting of the Human Factors and Ergonomics Society, Las Vegas, NV, 2011.

Khan F, Arndt S, Krauss D. Understanding the relationship between safety climate and warning compliance in occupational settings. Proceedings, 14th Annual International Conference on Industrial Engineering: Theory, Applications and Practice, Anaheim, CA, 2009.

Polk TA, Lacey HP, Nelson JK, Demiralp E, Newman LI, Krauss D, Raheja A, Farah MJ. The development of abstract letter representations for reading: Evidence for the role of context. *Cognitive Neuropsychology* 2009; 26(1):70–90.

Kubose T, Krauss D. Methodological considerations for using the English XL tribometer for post-hoc slip-and-fall evaluations. Proceedings, 52nd Annual Meeting of the Human Factors and Ergonomics Society, Santa Monica, CA, 2008.

Krauss D, Arndt S, Lakhiani S, Khan F. Additional considerations when applying the “Safety Engineering Hierarchy” in industrial work settings. Proceedings, 13th Annual International Conference on Industrial Engineering: Theory, Applications and Practice, Las Vegas, NV, 2008.

Arndt S, Krauss D, Weaver B. A previously unidentified failure mode for ladder-climbing fall-protection systems. Proceedings, American Society of Safety Engineers Professional Development Conference and Exposition, Las Vegas, NV, 2008.

Arndt S, Young D, Krauss D. Human factors issues in trucking—What does a qualified expert need to know? Trucking Law Seminar, Phoenix, AZ, April 17, 2008.

Krauss D, Lieberman D, Grossman H, Ray R, Scher I. An evaluation of perceptual experience of skiers using quantitative image processing. *Journal of ASTM International* 2008; 5(4).

Kuzel M, Krauss D, Moralde M, Kubose T. Comparison of subjective ratings of slipperiness to the measured slip resistance of real-world walking surfaces. International Conference on Slips, Trips and Falls, From Research to Practice, 2007.

Krauss DA, Kuzel MJ, Cassidy P, Goodman J. A review of technologies for studying visual perception under low-illumination conditions. Proceedings, 50th Annual Meeting of the Human Factors and Ergonomics Society, Santa Monica, CA, 2006.

Arndt SR, Wood CT, Delahunt PB, Wall CT, Krauss DA. Who's in the back seat? A study of driver inattention. Proceedings, 50th Annual Meeting of the Human Factors and Ergonomics Society, Santa Monica, CA, 2006.

Krauss DA, Kuzel MJ, Arndt SR, Delahunt PB. Validation of digital image representations of low-illumination scenes. SAE Paper 2006-01-1288, Society for Automotive Engineers, Inc., 2006.

Young D, Huntley-Fenner G, Trachtman D, Krauss D. Human performance issues in auditory collision-avoidance systems. Proceedings, 10th Annual International Conference on Industrial Engineering—Theory, Applications and Practice, pp. 64–68, Clearwater, FL, 2005.

Al-Tarawneh IS, Cohen WJ, Trachtman D, Bishu RR, Krauss DA. The effect of hands-free cellular telephone conversation complexity on choice response time in a detection task. Proceedings, 48th Annual Meeting of the Human Factors and Ergonomics Society, Santa Monica, CA, 2004.

Krauss DA. Mechanisms of letter perception. Doctoral Dissertation, Department of Psychology, University of California, Los Angeles, June 2003.

Presentations and Posters

Clausner TC, Fox JR, Krauss DA. Comprehension and production of graphs that metaphorically express linguistic semantic event structure. 8th International Cognitive Linguistics Conference, La Rioja, Spain, 2003.

Krauss DA, Engel SA. Effects of stimulus crowding in human extrastriate cortex. Meeting of the Society for Neuroscience, San Diego, CA, 2001.

Krauss DA, Engel SA. Differential effects of crowding on feature detection and letter recognition. Meeting of the Cognitive Neuroscience Society, New York, NY, 2001.

Krauss DA, Engel SA. Perceptual learning in color classification. Meeting of the Association for Research in Vision and Ophthalmology, Fort Lauderdale, FL, 2000.

Polk TA, Krauss D, Nelson J, Pond H, Raheja A, Farah MJ. The development of abstract letter identities: Evidence for a contextual hypothesis. Annual Meeting of the Psychonomics Society, 1998.

Project Experience

Evaluated the visibility of pedestrians, tractor-trailer combinations, and other parked vehicles on roadways under various reduced-lighting conditions.

Analyzed the performance capabilities, including perception-response time, for drivers and pedestrians under a variety of lighting and traffic conditions.

Created representative low-light photographs to use as demonstrative exhibits using recently developed and validated software and photography techniques.

Used the English XL tribometer to evaluate slip resistance on various flooring surfaces and correlated these measurements with pedestrian expectations of surface traction.

Programmed custom software in Matlab[®] to assess the visibility of terrain on a ski mountain under a variety of lighting conditions. These measurements were correlated with skier and snowboarder subjective ratings to understand perceptual biases to aid in predicting potentially hazardous visibility conditions.

Assisted companies with development and revision of product warnings and instructions for a wide range of products including those used in home, occupational, recreational, and agricultural settings.

Academic Appointments

- Lecturer, University of California, Los Angeles Department of Psychology
- Instructor, University of California, Los Angeles Extension

Peer Reviewer

- Human Factors and Ergonomics Society
- Worth Publishers

Professional Affiliations

- Human Factors and Ergonomics Society (member)
- Society for Automotive Engineers (member)