JASON A. DROLL

Principal Scientist

Principia Engineering, Inc.
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Experience

Dr. Jason Droll is a human factors scientist specializing in the analysis of human decisions and behavior in a variety of tasks such as driving, walking, or using consumer products. He has been a forensic consultant since 2008 and has testified on dozens of cases, addressing such issues as visibility, attention, reaction time, memory, and the role of expectation.

Prior to working at Principia, Dr. Droll received his doctorate in Brain and Cognitive Sciences at the University of Rochester and was a postdoctoral scholar at University of California Santa Barbara, researching eye movements and attention.

Education

- Ph.D., Brain and Cognitive Sciences, University of Rochester, 2005
- M.S., Brain & Cognitive Sciences, University of Rochester, 2003
- B.A., Molecular and Cellular Biology, University of California, Santa Cruz, 1998
    - Minor, Philosophy, University of California, Santa Cruz, 1998

Employment

- Principia Engineering, Inc., Senior Scientist, 2020-present
- Talas Engineering, Inc., Senior Scientist 2016-2020
- MEA Forensic Engineers & Scientists, LLC, Senior Scientist, 2010-2016
- Exponent, Inc., Scientist, 2008-2010
- Department of Psychological & Brain Sciences, University of California, Santa Barbara, 2005-2008

Professional Activities & Memberships

Member, Human Factors & Ergonomics Society
Member, Illuminating Engineering Society

Journal & Grant Reviewer (Since 2005):

- Attention, Perception & Psychophysics
- Journal of Cognitive Neuroscience
- Reed Elsevier Publications
- Vision Research
- Journal of Experimental Psychology
- Cognition Journal
- Neuropsychologia Journal
- Psychonomic Bulletin & Review
- Journal of Vision
- National Science Foundation Grant Review
- Virtual Reality
- Canadian Journal of Experimental Psychology

Awards

Postdoctoral Fellowship, National Geospatial Intelligence Agency, 2006-2008
Travel Scholarship (Top Ten Student Abstracts), Vision Sciences Society, 2004
Travel Scholarship, European Conference on Visual Perception, 2003
Predoctoral Training Grant, National Eye Institute, 1999-2003

Selected Publications & Presentations

Research Articles

Khan F, Krauss D, Alper S, Droll J, Arndt S, Lakhiani S, Cades D, "Do people heed warnings at gas stations?" Proceedings of the 2nd Annual World Conference of the Society for Industrial and Systems Engineering. Las Vegas, NV, USA, November 5-7, 2013.

Ising KW, Droll JA, Kroeker SG, D'Addario PM, Goulet JF, "Driver-related delay in emergency braking response to a laterally-incurring hazard." Proceedings of the Human Factors & Ergonomics Society 56th Annual Meeting, 2012.

Droll JA, Kubose T, Huang S, Aharoni DT, Young D, "An analysis of low-speed pedestrian crashes involving electric-powered and combustion-powered vehicles." Human Factors and Ergonomics Society 53rd Annual Meeting Proceedings 53(27), pp. 2029-2033, 2009.

Droll JA, Eckstein MP, "Gaze control and memory for objects while walking in a real world environment." Visual Cognition 17(6): pp. 1159-1184. 2009.

Eckstein MP, Peterson M, Pham B, Droll JA, "Statistical decision theory to relate neurons to behavior in the study of covert visual attention." Vision Research 49(10): pp. 1097-1128. 2009.

Droll JA, Abbey CK, Eckstein MP, "Learning cue validity through performance feedback." Journal of Vision 9(2): 18, pp. 1-22. 2009.

Droll JA, Hayhoe MM, "Trade-offs between gaze and working memory use." Journal of Experimental Psychology: Human Perception and Performance 33(6): pp. 1352-1365. 2007.

Droll JA, Gigone K, Hayhoe MM, "Learning where to direct gaze during change detection." Journal of Vision 7(14): 6, pp. 1-12. 2007.

Droll JA, Hayhoe MM, Triesch J, Sullivan BT, "Task demands control acquisition and storage of visual information." Journal of Experimental Psychology: Human Perception and Performance 31(6): pp. 1416- 1438. 2005.

Bisley JW, Zaksas D, Droll J, Pasternak T, "Activity of MT neurons during a memory for motion task." Journal of Neurophysiology 90: pp. 2752-2757. 2003.

Book Chapters

Droll JA, Hayhoe MM, "Seeing what we can do: Insights into vision and action through observations of natural behavior." In: Handbook of Embodied Cognition, Garzon P, Gomila T (Eds), pp. 189-206. San Diego: Reed Elsevier. 2008.

Hayhoe MM, Droll JA, Mennie N, "Learning where to look." In: Eye movement research: Insights into mind and brain, Van Gompel R, Fischer M, Murray W, Hill R (Eds), pp.641-660. San Diego: Reed Elsevier. 2007.

Other Articles

Ising K, Droll J, D'Addario P, "There's something in the road – now what?!" Claims Canada. 2014.

Kahn F, Krauss D, Alper S, Droll J, Arndt S, Lakhiani S, Cades D. "Do people heed warnings at gas stations?" Michigan Defense Trial Counsel, May 2012.

Droll JA, "Think fast! The velocity of visual attention in vehicle accidents." American Association for Justice. Motor Vehicle Section Vol 18, No. 1. 2011.

Conference Abstracts for Poster or Lecture Presentations

Droll J, Eckstein M, "Expected object position of two hundred fifty observers predicts first fixations of seventy seven separate observers during search." Vision Sciences Society Meeting, Naples, FL, May 9- 14, 2008.

Droll JA, Pham BT, Abbey CK, Eckstein MP, "Gaze control and perceptual decisions are modulated by learned expected reward." Vision Sciences Society Meeting, Sarasota, FL, May 11-16, 2007.

Droll JA, Eckstein MP, "Understanding visual change perception in unconstrained environments using eye tracking. IC Postdoctoral Research Fellowship Colloquium. 2007.

Droll JA, Pham BT, Abbey CK, Eckstein MP, "Implicit, but not explicit, measures of learning cue validity during visual search require task feedback." Society for Neuroscience Annual Meeting, Atlanta, GA, October 14-18, 2006.

Droll JA, Pham BT, Abbey CK, Eckstein MP, "Learning predictive cues to optimize visual search." Vision Sciences Society Meeting, Sarasota, FL, May 5-10, 2006.

Gigone KM, Droll JA, Hayhoe MM, "Gaze patterns in search reflect learnt environmental probabilities and rewards." Vision Sciences Society Meeting, Sarasota, FL, May 5-10, 2006.

Chajka K, Hayhoe MM, Sullivan BT, Pelz J, Mennie N, Droll JA, "Predictive eye movements in squash." Vision Sciences Society Meeting, Sarasota, FL, May 5-10, 2006.

Robinson AE, Triesch J, Hayhoe MM, Droll JA, Sullivan BT, "Change blindness during multiple interactions with a single object." Vision Sciences Society Meeting, Sarasota, FL, May 5-10, 2006.

Droll J, Gigone K, Hayhoe M, "Influencing gaze allocation through Bayesian integration of environmental probabilities." Society for Neuroscience Annual Meeting, Washington, DC, November 12- 16, 2005.

Droll JA, Hayhoe MM, "Knowing when to remember and when to forget: Expected task relevance controls working memory use." Vision Sciences Society Meeting, Sarasota, FL, May 6-11, 2005.

Droll JA, Hayhoe MM, Sullivan BT, "Task demands control acquisition and maintenance of visual information." Object Perception, Attention & Memory 12th Annual Meeting, Minneapolis, MN, November 18, 2004.

Droll JA, Hayhoe MM, Sullivan BT, "Gaze and hand movements indicate acquisition of new object features." Society for Neuroscience Annual Meeting, San Diego, CA, October 23-27, 2004.

Droll J, Hayhoe M, Triesch J, Sullivan B, "Working memory for object features is influenced by scene context." Vision Sciences Society Meeting, Sarasota, FL, April 30 – May 5, 2004.

Droll J, Hayhoe M, Triesch J, Sullivan B, "Attention is not enough: Task micro-structure determines visual information acquisition." Society for Neuroscience Annual Meeting, New Orleans, LA, November 4-9, 2003.

Droll J, Hayhoe M, Triesch J, Sullivan B, "Influence of task demands on object representations." European Conference on Visual Perception, Paris, France, September 1-5, 2003.

Droll J, Hayhoe M, Triesch J, Sullivan B, "Task relevance of object features modulates the content of visual memory." Vision Sciences Society Meeting, Sarasota, FL, May 9-14, 2003.

Droll JA, Zaksas D, Bisley JW, Pasternak T, "MT neurons respond to remote visual motion stimuli used in a working memory task." Society for Neuroscience Annual Meeting, San Diego, CA, November 10-15, 2001.

Droll JA, Bisley JW, Pasternak T, "Activity in MT neurons during a memory for visual motion task." European Conference on Visual Perception, Kusadasi, Turkey, August 26-30, 2001.

Droll JA, Bisley JW, Pasternak T, "The delay activity of some MT neurons may signal the remembered direction of motion." Vision Sciences Society Meeting, Sarasota, FL, May 4-8, 2001.

Droll JA, Bisley JW, Pasternak T, "Delay activity in area MT neurons during a visual working memory task." Society for Neuroscience Annual Meeting, New Orleans, LA, November 4-9, 2000.

Droll JA, Bisley JW, Pasternak T, "Delay activity in area MT neurons during a visual working memory task." Investigative Ophthalmology and Visual Science Supplemental 41: S721. 2000.

Invited Academic Presentations

"Inferring cognitive states through eye movements during natural behavior." NASA. April 2008.

"How task demands and scene structure guide eye movements, visual attention and working memory." California State University, Long Beach. March 2008.

"Learning scene statistics and reward structure during visual search." UC Santa Barbara, Department of Psychology, Cognition & Perception Seminar. June 2006.

"How task demands and prior knowledge control eye movements, visual attention, and use of working memory." UCLA; UC Santa Barbara; California Institute of Technology; Johns Hopkins University. May 2005.

"Task demands control acquisition and maintenance of visual information." UC San Diego, Salk Institute; University of Rochester. November 2004.

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