James R. Kubricht, Ph.D.

Postdoctoral Researcher

AI – Computer Vision

GE Research

**EDUCATION**

* Ph.D. Computational Cognition, 2018, UCLA
* M.S. Psychology, 2014, UCLA
* B.S. Physics, 2013, UT Austin

Research Experience

Dr. Kubricht has conducted research on human perception and reasoning from a primarily Bayesian computational perspective. His work explores how dynamic perceptual information is utilized by the human brain, and when this type of information is particularly useful as an input to neurally encoded reasoning systems in the human brain. His work has explored human predictions and judgments about physical situations in 2D experiments as well as in 3D virtual environments where properties of the world are controlled and manipulated. He has applied probabilistic simulation models to explain human predictions about the dynamics of non-solid substances and has investigated causal models as a framework for explaining spontaneous analogical transfer performance based on concepts in dynamic graphical displays. Dr. Kubricht has also studied the influence of relative motion information on physical and causal judgments in object collision displays and has worked on projects examining mechanical reasoning through active causal learning.

Dr. Kubricht is currently working as a postdoctoral researcher in computer vision at GE Research. Specifically, he is interested in how computer vision systems can be utilized to extract meaningful information and infer latent properties in dynamic physical (and social) scenes. Following previous research directions, Dr. Kubricht is interested in how the brain combines noisy perceptual inputs with intuitive knowledge about physical principles to make predictions about how a system might behave in the future. Moreover, he is interested in how computational systems can be designed to reflect this remarkable capacity.

Publications

* **Kubricht, J. R.**, & Lu, H. (2018). Physical and causal judgments for object collisions depend on relative motion. In *Proceedings of the 40th annual conference of the cognitive science society*.
* Edmonds, M., **Kubricht, J. R.**, Summers, C., Zhu, Y., Rothrock, B., Zhu, S. C., & Lu, H. (2018). Human causal transfer: Challenges for deep reinforcement learning. In *Proceedings of the 40th annual conference of the cognitive science society*.
* Wang, D., **Kubricht, J. R.**, Zhu, Y., Liang, W., Zhu, S. C., Jiang, C., & Lu, H. (2018). Spatially perturbed collision sounds attenuate perceived causality in 3D launching events. In *IEEE conference on virtual reality and 3D user interface*.
* **Kubricht, J. R.**, Holyoak, K. J., & Lu, H. (2017). Intuitive physics: Current research and controversies. *Trends in Cognitive Sciences, 21*(10), 749-759. doi:10.1016/j.tics.2017.06.002
* ****Kubricht, J. R.****, Jiang, C., Zhu, Y., Zhu, S. C., Terzopoulos, D., & Lu, H. (2017). Consistent probabilistic simulation underlying human judgment in substance dynamics. In Proceedings of the 39th annual conference of the cognitive science society.
* Lin, J., Zhu, Y., ****Kubricht, J. R.****, Zhu, S. C., & Lu, H. (2017). Visuomotor adaptation and sensory recalibration in reversed hand movement task. In Proceedings of the 39th annual conference of the cognitive science society.
* Ye, T., Qi, S., **Kubricht, J. R.**, Zhu, Y., Lu, H., & Zhu, S. C. (2017). The Martian: Examining human physical judgments across virtual gravity fields. *IEEE Transactions on Visualization and Computer Graphics, 23*(4), 1399-1408. doi:10.1109/TVCG.2017.2657235
* **Kubricht, J. R.**, Lu, H., & Holyoak, K. J. (2016). Individual differences in spontaneous analogical transfer. *Memory & Cognition, 45*(4), 576-588. doi:10.3758/s13421-016-0687-7
* ****Kubricht, J. R.****, Jiang, C., Zhu, Y., Zhu, S. C., Terzopoulos, D., & Lu, H. (2016). Probabilistic simulation predicts human performance on viscous fluid-pouring problem. In Proceedings of the 38th annual conference of the cognitive science society.
* ****Kubricht, J. R.****, Lu, H., & Holyoak, K. J. (2015). Animation facilitates source understanding and spontaneous analogical transfer. In Proceedings of the 37th annual conference of the cognitive science society.

## awards

* Dissertation Year Fellowship, UCLA Graduate Division, 2017-2018
* Graduate Research Fellowship, National Science Foundation, 2014-2017
* Dean’s Scholar Award, UCLA, 2013-2015
* Distinguished University Fellowship, UCLA, 2013-2014
* National Undergraduate Fellowship, DOE, 2011
* Distinguished College Scholar, UT Austin, 2010-2013
* President’s Scholarship, UT Austin, 2008-2012
* Houston Endowment Scholarship, Jesse H. & Mary Gibbs Jones Foundation, 2008-2012