



Exponent®
Engineering & Scientific Consulting

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Professional Profile

Dr. Phillips has expertise in human perception, perceptual psychology, and visual cognition. His work focuses on understanding how people perceive, interpret, recognize, and respond to information in their environment, and how it may contribute to accidents. He applies principles of human factors and perceptual psychology to evaluate human performance and behavior in safety-critical environments.

His areas of expertise include hazard perception, attention, decision-making, perception-response processes, experimental design, visual psychophysics and stimulus development, and computational modeling. Dr. Phillips has also performed assessments of physical environments that include analyses of lighting, glare, and sightline evaluations as they may relate to motor vehicle incidents and pedestrian slip/trip-and fall scenarios. He also has expertise in evaluating the human factors of instructions, warnings and safety communication.

Dr. Phillips earned his Ph.D. in Psychology from the University of California, Los Angeles (UCLA) Computational Cognition program. His doctoral research investigated the encoding and representation of contour shape in human visual perception, combining psychophysical experimentation with computational modeling to better understand how the visual system processes and represents shape information. He also studied functional differences between human visual processing and artificial vision systems, providing insight into the strengths and limitations of machine perception relative to human observers. In addition to his research, Dr. Phillips has also instructed courses at UCLA in sensation and perception, cognitive psychology, and computer programming for behavioral sciences at introductory and advanced levels.

Academic Credentials & Professional Honors

Ph.D., Psychology, University of California, Los Angeles (UCLA), 2026

M.A., Psychology, University of California, Los Angeles (UCLA), 2021

B.A., Psychology, University of California, Los Angeles (UCLA), 2016

Shepherd Ivory Franz Distinguished Teaching Assistant Award, 2026

UCLA NRT MENTOR (Modeling and Understanding Human Behavior) fellowship, 2021

Prior Experience

Lifeguard, Lake Mission Viejo, 2010-2013

Professional Affiliations

Vision Sciences Society (VSS)

Publications

Kellman, P.J., Phillips, A., Baker, N., & Garrigan, P. (in preparation) The Arclet Model of Human Curvature Representation

Baker, N., Garrigan, P., Phillips, A., & Kellman, P. J. (2023). "[Configural relations in humans and deep convolutional neural networks](#)." Frontiers in artificial intelligence, 5, 961595.

Kellman, P. J., Baker, N., Garrigan, P., Phillips, A., & Lu, H. (2023). "[For deep networks, the whole equals the sum of the parts](#)." Behavioral and Brain Sciences, 46.

Mettler, E., Phillips, A. S., Massey, C. M., Burke, T., Garrigan, P., & Kellman, P. J. (2019, July). "[The synergy of passive and active learning modes in adaptive perceptual learning](#)." In A.K. Goel, C.M. Seifert, & C. Freksa (Eds.), Proceedings of the 41st Annual Conference of the Cognitive Science Society (pp. 2351-2357). Montreal, QB: Cognitive Science Society.

Presentations

Kellman, P.J., Phillips, A., Baker, N., & Garrigan, P. (In press). From Neural Units to Constant Curvature Representations of Contour Shape. Journal of Vision.

Phillips, A., Kellman P.J., Constant Curvature Operators in Human Vision (in press) Journal of Vision

Phillips, A., Kellman P.J., Constant Curvature Filters in Human Vision. Talk at the 2025 Annual Meeting of the Configural Processing Consortium, Denver, Colorado

Phillips, A. S., & Kellman, P. J. (2025). Path Integration Reflects an Intermediate Representation in Contour Perception. Journal of Vision, 25(9), 2908-2908.

Kellman, P., Baker, N., Phillips, A., Garrigan, P., & Lu, H. (2025). Learning Same-Different Relations of Visual Properties by Humans and Deep Convolutional Neural Networks. Journal of Vision, 25(9), 2909-2909.

Phillips, A., Erlikhman, G., & Kellman, P. J. (2021). On the relationship between perceptual learning and statistical learning: evidence from coherent motion detection. Journal of Vision, 21(9), 2871-2871.

Mettler, E. W., Phillips, A. S., Burke, T., Garrigan, P., Massey, C. M., & Kellman, P. J. (2019). Perceptual Learning Benefits From Strategic Scheduling of Passive Presentations and Active, Adaptive Learning. Journal of Vision, 19(10), 293-293.