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Engineering & Scientific Consulting

John Erik Vanston, Ph.D.

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Professional Profile

Dr. John Erik Vanston is a psychologist and vision scientist by academic training. He applies his academic expertise and industry knowledge to the evaluation of incidents in a variety of contexts. These contexts include workplaces, transportation, and other public settings.

Dr. Vanston routinely addresses human factors and safety issues pertaining to worker injuries, automotive and motorcycle collisions, and interactions with consumer products. In this work, he applies scientific literature, mandatory and voluntary standards, and other recognized and good practices to questions about human sensation, perception, attention, and cognition, warnings and labels, slip/trip-and-falls, and product safety. He also designs and conducts empirical user studies of a diverse range of products, including virtual and augmented reality devices, wearable health monitoring technology, and medical devices. Drawing on both quantitative (e.g., psychophysics, electroencephalography) and qualitative (e.g., focus groups, interviews, surveys) methods, he serves his clients as a trusted advisor to help them understand how users, including children, perceive and interact with objects and other individuals in the world around them.

Academic Credentials & Professional Honors

Ph.D., Psychology, University of Nevada Reno, 2019

M.A., Psychology, University of Nevada Reno, 2015

B.S., Psychology, Texas State University, 2011

ARVO 2021 MIT Outstanding Poster Award (2021)

Solso Outstanding Achievement Award (2018)

Gardner Graduate Psychology Award (2018)

Academic Appointments

Instructor – Physiological Psychology; Statistical Methods, Psychology Department, University of Nevada, Reno, 2014-2018

Prior Experience

Postdoctoral Scholar, University of California, Berkeley, 2019-2022

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Publications

Fong, J., Doyle, H. K., Wang, C., Boehm, A. E., Herbeck, S. R., Pandiyan, V. P., ... & Ng, R. (2025). "Novel color via stimulation of individual photoreceptors at population scale," Science Advances, 11(16), 1052

Greene, M. J., Boehm, A. E., Vanston, J. E., Pandiyan, V. P., Sabesan, R., & Tuten, W. S. (2024). "Unique yellow shifts for small and brief stimuli in the central retina," Journal of Vision, 24(6), 2-2.

Doyle, H. K., Herbeck, S. R., Boehm, A. E., Vanston, J. E., Ng, R., Tuten, W. S., & Roorda, A. (2023). "Boosting 2-photon vision with adaptive optics," Journal of Vision, 23(12), 4-4.

Doyle, H. K., Fong, J., Wang, C., Herbeck, S. R., Vanston, J. E., Boehm, A. E., ... & Ng, R. (2023). "Eliciting Color Percepts over Extended Fields through Cone-by-Cone Stimulation," Journal of Vision, 23(11), 46-46.

Vanston, J.E., Boehm, A.E., Tuten, W.S., Roorda, A. (2023). It's not easy seeing green: the perception of small spots. Journal of Vision, 23(5):2, 1-15.

Doyle, H., Herbeck, S., Boehm, A.E., Vanston, J.E., Ng, R., Roorda, A. (Submitted). Investigative Ophthalmology & Visual Science 63 (7).

Vanston, J.E., Tregillus, K.E.M., Webster, M.A., & Crognale, M.A. (2021). Task-dependent contrast gain in anomalous trichromats. Vision Research, 184, 14-22.

Tregillus, K.E.M., Isherwood, Z.J., Vanston, J.E., Engel, S.A., MacLeod, D.I.A., Kuriki, I., & Webster, M.A. (2020). Color compensation in anomalous trichromats assessed with fMRI. Current Biology, 31(5), 936-942.

Ijekah, R., Vanston, J.E., & Crognale, M.A. (2019). Mechanisms Contributing to Increment Threshold and Decrement Threshold Spectral Sensitivities. Vision Research, 158, 158-163.

Vanston, J.E. & Crognale, M.A. (2018). Effects of eccentricity on color contrast. Journal of the Optical Society of America A, 35(4), 122-129.

Vanston, J.E. & Strother, L. (2017). Sex differences in the human visual system. Journal of Neuroscience Research, 95, 617-625.

Ng, J.S., Self, E., Vanston, J.E., Nguyen, A.L., & Crognale, M.A. (2015). Evaluation of the Waggoner Computerized Color Vision Test. Optometry and Vision Science, 92(4), 480-486.

Presentations

Invited:

"Task-dependent contrast gain in anomalous trichromacy." (2021). OSA Data Blast: "Variation in Color Vision: Individual Differences, Anomalies, and Deficiencies". Online.

"Threshold and suprathreshold measures of compensation in anomalous trichromats." (2018). Smith-Kettlewell Eye Research Institute, San Francisco, CA.

"fNIRS applications in neuroscience research." (2014). Stretching Behavioral Economics Annual Conference, Reno, NV.

Other:

Vanston, J.E., Boehm, A.E., Tuten, W.S., & Roorda, A.J. (2021). Influence of stimulus size, intensity, & natural eye motion on small-field color perception. ARVO Annual Meeting 2021, Online.* *Winner of the ARVO 2021 MIT Outstanding Poster Award

Vanston, J.E. & Crognale, M.A. (2018). Multivariate classification of visual evoked potentials. Optical Society of America Fall Vision Meeting, Reno, NV.

Vanston, J.E., Tregillus, K.E.M., & Crognale, M.A. (2017). Threshold detection and suprathreshold perception in anomalous trichromats. International Colour Vision Society Meeting, Erlangen, Germany.

Vanston, J.E. & Crognale, M.A. (2016). Perception of color and luminance across the visual field. International Colour Vision Society Summer School, Oxford, UK.

Vanston, J.E. & Crognale, M.A. (2015). Chromatic visual evoked potentials using customized color space. Vision Sciences Society Annual Meeting, St. Petersburg, FL.

Vanston, J.E. & Crognale, M.A. (2014). Minimally distinct border estimates of macular pigment distribution. Vision Sciences Society Annual Meeting, St. Petersburg, FL.

Project Experience

Managed a user study comparing a prototype wearable health tracking device to several existing devices, providing the client with real-time benchmarking in a variety of natural and naturalistic settings.

Served as project manager for a litigation matter involving a motorcycle versus automobile collision. Analyzed operator behavior, human factors principles, standard of care for safe motorcycle operation, peer-reviewed scientific literature, and authoritative texts to evaluate the subject incident. Helped plan and execute a riding demonstration using an exemplar motorcycle in the area of the incident.

Created a detailed narrative and visual account of users' journeys while performing various functions in an augmented-reality headset.

Served as project manager for a litigation matter involving a worker fatally injured by an industrial auger. Evaluated worker behavior, training, and knowledge, employer policies and procedures, applicable OSHA regulations, and safety best practices. Worked in tandem with biomechanists to analyze the subject incident.

Assessed the fit and comfort of prototype glasses, which included optometric measurements, qualitative evaluation, and detailed 3D scanning.

Evaluated the relative fidelity of several virtual reality pass-through algorithms. Measured performance on tasks testing visual and cognitive function and hand-eye coordination.

Managed an expert consultation, and subsequently a human factors validation study, for a CPAP-sanitizing medical device.

Additional Education & Training

TEAM Arizona Advanced RiderCourse

TEAM Arizona Confident RiderCourse

Team Oregon Advanced Riding Techniques Course

OSHA 511, OSHA Standards for General Industry

OSHA 510, OSHA Standards for Construction Industry

American Heart Association CPR/AED Certified