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John Vanston, Ph.D.

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Professional Profile

Dr. John Erik Vanston is a human factors scientist with a strong background in visual neuroscience. Dr. Vanston has worked extensively with virtual and augmented reality hardware, leveraging his expertise in experimental psychology to help clients gain insight into how people use their products to interface with the world around them. He is experienced in a variety of quantitative techniques including psychophysics, electroencephalography (EEG), function magnetic resonance imaging (fMRI), and adaptive optics scanning laser ophthalmoscopy (AOSLO), which he has utilized to investigate the relationship between visual physiology and perception. For several years he served as manager and lead researcher for a color vision assessment clinic, evaluating normal and abnormal color perception and communicating the results to laypersons. During this time Dr. Vanston helped develop a novel computer-based test for color vision deficiency, using his quantitative and qualitative skills to advance the field of clinical vision research.

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

Publications

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

· Coordinated data collection of 200 participants in four cities across the U.S. for a study evaluating potential usage and preference for a variety of augmented-reality experiences.

· Created a detailed narrative and visual account of users' journeys while performing various functions in an augmented-reality headset. Took the helm when the project entered troubled waters and ensured client satisfaction.

· 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.