Neuroengineering the Creative Brain: Challenges and Opportunities at the Nexus of Art and Science

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LECTURE ABSTRACT

Mobile brain-body imaging (MoBI) technology, AI tools, and brain-computer interfaces (BCI) allow us now to study the human brain in action and in context in complex natural settings such as museums, performance venues and classrooms. In the first part of my talk, I will summarize our convergent research approach based on trans-disciplinary, collective, multimedia collaborations that critically uncovers the challenges and opportunities for transformational and innovative research and performance at the nexus of art, science and engineering. In the second part, I will summarize some examples of new research directions with high societal impact while elucidating important questions such as *How do arts–science collaborations employ aesthetics as a means of problem-solving and thereby create meaning? How are neurotechnologies changing science and artistic expression? How are the arts and citizen science innovating neuroscience studies, informal learning and outreach in the public sphere? How do the creative arts and aesthetic experiences engage the brain and mind and promote innovation?*

SPEAKER BIOSKETCH

Pepe Contreras-Vidal (IEEE Fellow), is a neuroengineer and director of the NSF IUCRC BRAIN Center at the University of Houston, where he develops brain-machine interfaces and wearable exoskeletons to restore motor function in individuals with motor disabilities. His work at the nexus of art and science is opening new windows to study the neural basis of human creativity in children and adults while informing neural interfaces. He recently edited the Springer Nature book "Mobile Brain–Body Imaging and the Neuroscience of Art, Innovation and Creativity" (ISBN 978-3-030-24325-8; ebook: ISBN 978-3-030-24326-5). His research has appeared in The Economist, Nature, Der Spiegel, NPR, and Wall Street Journal among others. His career in biomedical research has been highlighted in Science.

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