

Brain, Mind, Body, Art and the Neural Basis of Creativity

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Non-invasive brain-computer interface (BCI) systems have shown the potential to extend neural control beyond clinical applications into broader human-computer interaction for communication and control of digital, physical and more recently, co-creative environments. Whereas early applications of Generative AI (GenAI) in art often treated the machine as a one-way executor of human ideas, the next frontier lies in interactive intelligence: BCI – GenAI systems that engage in the improvisational flow of human expression. Such systems detect internal states and respond dynamically to intent, emotion, attention or other states, thereby facilitating ongoing human–AI collaboration during artistic performance or creation. In this talk, I will provide an overview of our collaborative art-science performance studies integrating mobile brain-body imaging (MoBI), BCI approaches, hyperscanning, adaptive noise canceling algorithms and GenAI to understand the creative brain during artistic performance in ecological settings. Time permitting, I will conclude with examples of new applications to investigate the impact of nature- and faith-based practices on brain health and wellbeing.