

SOMA: Synesthetic Observation of Movement and Art – Designing a New Language of Artistic Creation Through Emotion, Movement, and Technology

Abstract

The paper presents SOMA (Synesthetic Observation of Movement and Art) as a concept design for an interactive performance environment that translates participants' emotional and physiological data into sound, light, and image modulation in real time. Developed by the MindEasy Research Lab, SOMA was first implemented in the theatrical performance Umwelt (Scena Robocza, Poznań, 2025). The system combines EEG, heart rate variability (HRV), and electrodermal activity (EDA) data through the Lab Streaming Layer (LSL) protocol to achieve low-latency synchronization between human signals and audiovisual parameters. The project explores how biometric and neural feedback can be used not only as analytical tools but as a creative medium for audience - performer interaction. Observations suggest that the strongest affective engagement occurs during transitional phases of sensory change, which could be verified in future iterations using quantitative indicators such as EEG synchrony and HRV variability.

Rather than positioning SOMA as scientific research, the paper presents it as a technological-artistic proposal - a prototype of an empathic, adaptive system that extends the expressive language of performance through biofeedback-driven co-creation.