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Integrating Visual and Sonic Experiences through Modeling Affective Communication

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ABSTRACT

Affective communication, as modeled by Russell's circumplex, is structured around two dimensions: valence (positive to negative) and arousal (intensity of emotion). Widely used in psychological research on human emotions, this model translates emotional reactions and interpretations arising from the aesthetic experience of artistic works into quantifiable data.

The proposed computational system leverages these affective dimensions to map user responses into probabilistic distributions of affects, derived either from direct human input (e.g., questionnaires) or from the output layer of machine learning models trained on annotated datasets. By analyzing these distributions, the system creates a palette of affects that serves as the foundation for generating and transitioning between sonic and visual elements.

Algorithmic composition builds on this probabilistic mapping by using the predefined palette of affects to guide the structuring of sonic planes. The soundscape is then organized into zones, each corresponding to a distinct emotional or gestural quality. These zones, designed without reliance on temporal constraints, align with the palette to enable smooth algorithmic transitions between different affects. Techniques such as concatenative synthesis and cross-granular synthesis further allow for the dynamic blending and transformation of these zones, enriching the compositional process and fostering a cohesive audio-visual experience.

By modeling expressive images and sounds, the system captures and communicates shared human experiences. Inspired by the innate ability of the human face and voice to convey nuanced emotions, it bridges visual and sonic mediums to create an instinctive, emotionally resonant connection between the audience and the artwork.

ABOUT THE PRESENTERS

Cauã Cestari
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Cauã Cestari is a talented and promising sonic artist with experience in musical composition, production, and audio editing. Proficient in leading digital audio workstations (DAWs), including Ableton, FL Studio, and Reaper, as well as specialized software such as MAX/MSP and SuperCollider. Demonstrates a strong technical foundation in creating and manipulating sound. Has participated in interdisciplinary research projects at the intersection of music and technology. These initiatives include producing electroacoustic works designed to foster greater engagement among listeners unfamiliar with music production, showcasing a commitment to accessibility and innovation in sound art. Develops aesthetic approaches that reflect the richness of different periods of Western concert music as well as electroacoustic genres, integrating these perspectives into sonic projects to achieve compelling and inclusive artistic narratives. This creative versatility is complemented by a deep understanding of both traditional and experimental compositional methods. Highly skilled in communication, with advanced fluency in Portuguese and English and intermediate proficiency in Spanish. This multilingual capacity enables collaboration across diverse cultural and professional contexts. Driven by curiosity and creativity, this artist exemplifies the potential to push the boundaries of sonic art through innovative techniques and interdisciplinary exploration. With a dedication to expanding the role of sound in contemporary media, his work bridges the gap between technology, art, and human experience.

Angelo Gabriel Tavares
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Angelo Gabriel is a violist and sculptor of Porto Alegre, Brazil. He studied Bachelor of Music Degree in Viola Performance (2019-2025) at Federal University of Rio Grande do Sul (Brazil) and acted as teacher since 2017. As a private viola instructor, gave private viola and violin lessons based on the student-centered learning (SCL) and embodied mapping philosophies, allied with the latest neuroscience research data on efficient practice. Also have broad experience with students on the ADHD and autism spectrum. As a sculpture, taught masterclasses on human face clay modelling processes at the Selmo Ramos Studio (2021) and was invited for two important exhibitions of ceramic sculpture: “Em Um Só Corpo” (2023) and “Bando de Barro” (2024).

Angelo also acted as group instruction to violin and viola students at social projects like “Fábrica dos Sonhos” (2024) and have orchestral experience since 2013 and are the principal viola of Philharmonic Orchestra of UFRGS. Some achivements and awards are: being selected for the Conference “Cycle of Readings for Musicians” with the project “An Unfinished Exhibition: Integrating the Arts through Sculpture, Composition and Performance” at the Rio Grande do Sul Federal University, in Brazil in 2023, being a winner at the 38th Santa Maria University International Winter Music Festival Young Artists Competition (2023) and being accepted into the Master of Music degree program at Souther Illinois University (2025).