Orbits and Bodies

A performance connecting human gestures, orbital data, and real-time audiovisual systems.

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Introduction

Orbits and Bodies explores the entanglement of embodied gesture, astronomical data, and networked computation. The performance uses real-time audiovisual systems to translate performers' movements, audience interaction, and orbital parameters of exoplanets into control signals. Through this entangled system, human presence, planetary motion, and web-native technologies form a dynamic audiovisual space.

Performance Description

Duration. 30 minutes, structured in three continuous movements.

Narrative structure. Each section corresponds to a phase of a dream state—Light Sleep, Deep Sleep, and Lucid Dream. *Light Sleep* presents and transforms sounds from the present moment and immediate environment. *Deep Sleep* abstracts and reimagines the sonic material. *Lucid Dream* reintegrates the transformed sounds into a re-sensitised present.

Sonic materials. Field recordings collected across forests and rivers in South America and Europe serve as the base layer. These recordings are modulated in real time via a browser-based interface used by both performers and the audience. This system enables the shaping of soundscapes into percussive, harmonic or abstract sonic textures. Machine learning models trained on custom datasets that emphasise compound metres and hemiolas are used to generate rhythm patterns. Real-time interaction allows the decoding of structures uncommon in popular music.

Interaction design. The piece is driven by a network of sensors, interfaces, and algorithmic processes. A custom web-based application (Interplanetary Players) maps exoplanet orbital data to synthesis parameters. RAVE neural audio synthesis models are controlled via latent space manipulation using a Node-based face-tracking system. Rhythms are decoded in real time from their latent space using a browser-based interface (R-VAE-JS). Audience members participate through mobile devices and interactive physical props distributed in the space.

Technical requirements. *Orbits and Bodies* require a stereo or multichannel system with subwoofers. A Stable LAN, scaled to audience size, with internet access and no firewalls. One large projector for audience visualization of the instruments and modes of interaction. Two display screens for visualisation and real-time performer interaction.

Documentation Links

- Demo video.
  (https://www.dropbox.com/scl/fi/1exw0by1nloxo4p7mo4qx/WAC-gabriel-bruna-01.mov?rlkey=qf6k0gpsm4mbtdq7dl811wj8f&dl=0)
- Code repositories.
  - Interplanetary Players
  - interplanetary-players-web
  - interplanetary-players-rnbo
- Selected references.
  - Vigliensoni, G., and R. Fiebrink. 2025. Data- and interaction-driven approaches for sustained musical practices with machine learning. *Journal of New Music Research, January, 1–14.* doi:10.1080/09298215.2024.2442361.
  - Vigliensoni, G., and R. Fiebrink. 2023. Steering latent audio models through interactive machine learning. In *Proceedings of the 14th International Conference on Computational Creativity (ICCC'23).* doi.org/10.5281/zenodo.8087978.

Biographies

Bruna Guarnieri Colasso is a Uruguayan artist and luthier based in Berlin. She is the founder of Maar.World, a space for fluid music-making that moves beyond binaries, between physical and digital formats. Her sound work has been featured at the Venice Architecture Biennale (Uruguayan Pavilion, 2018/2021) and Milan Expo 2015 (Uruguayan and Chilean Pavilions). In 2021, she won the AI and Music S+T+ARTS Festival Hackathon. She has served as lead developer and creative lead in artist-led projects such as Head Brothers, Exoplanetas, and Aventures Sonores.

Gabriel Vigliensoni is an electronic music artist, performer, and researcher working at the intersection of sound-making and machine learning. His practice merges formal musical training with extensive studies and experience in sound recording, music production, music information retrieval, human-computer interaction, and machine learning to explore and develop novel approaches to music composition and performance. He holds a PhD in Music Technology from McGill University and is currently an Assistant Professor in Creative AI at Concordia University.