

## *In-Tensions*

Interactive technologies are becoming tools to support and enhance creativity in art practice. Biosensors, such as myogram bracelets and motion tracking devices, are able to produce sound and visuals. The data achieved can be used in unique ways to create artistic multisensory elements and inspire artistic processes.

This presentation will showcase techniques and applications of performative gestures on the piano in real-time artistic audiovisual creation. Gestures, as “goal-directed actions” (Godoy & Leman 2010), together with muscular tensions represent ways to produce intended sounds on an instrument. In piano performance, sound can be traditionally produced directly on the keyboard, or on the strings in the soundboard, in case of extended techniques. More contemporary approaches entail the application of interactive technology to manipulate piano sound through intended gestures and muscular tensions (Tanaka 2010).

Musicians and composers are all the more stimulated to renovate and augment traditional playing acoustic instruments and achieve new performative actions and expressions by exploring this cutting-edge technology. Therefore, central questions are:

- What is the role of gestural interaction to enhance today’s music expressivity?
- How can we contribute as artist-researchers to its development in the perspective of interactive performance?
- In which ways can the categorization of gestures be implemented as a systematic vocabulary of multimodal performances?

The generative process of this research entails a *performer-based analysis method* (Caruso et al., 2016), based on a mixed approach, which integrates qualitative data collection through narrative self-descriptions/reflections (Schön 1984) and quantitative motion data collection.

The creative potential of interactive gestural technology is examined through the following steps:

1. Mapping/categorising performative movements into a vocabulary of sonified and visualized gestures
2. Creating a multi-sensory audiovisual generative system that makes use of such gestures reflecting of the cognitive perception of the visual and aural elements
3. Implementing this vocabulary in a multimodal performance based on improvisation and written parts with proper score annotations

The output of this artistic research can be useful for other artist-researchers, performers and composers, in exploring new practices in the techniques and aesthetics of audiovisual contemporary music performance, augmented by technological systems.

### **Videos:**

<https://www.facebook.com/watch/?v=522328248319753q>

[https://www.youtube.com/watch?v=FftTTh\\_95n4](https://www.youtube.com/watch?v=FftTTh_95n4)



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**Dr. Giusy Caruso** is an artist researcher and concert pianist. Her research explores the human-machine interaction for the gestural and sound analysis and creation of multimedia performances. Under the areas of Systematic Musicology and Embodied Music Cognition, her PhD research contributed to renovating performance analysis with a method grounded on the use of technology-enhanced mirror. Post-doc artist researcher at the Royal Conservatoire Antwerp and guest researcher at IPEM, Ghent University, and at the Laboratoire de Musicologie, Université libre de Bruxelles, Dr. Caruso is visiting professor at London Performing Academy of Music to hold a course on music performance practice and technology. She is in the editorial board of ITAMAR, journal by Valencia University, and a peer reviewer. Rewarded by important institutions, she is pursuing an international concert activity taking part into Radio and TV shows. Renowned interpreter of contemporary music, she released CDs, which have been receiving worldwide acclamation.



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**Umut Eldem** is a composer, pianist, and researcher. His musical works and research focus on the exploration of synaesthesia as an artistic medium. He has given lectures on his research of synaesthesia, and had his audiovisual works and installations combining sound and colours presented in Belgium, Netherlands, Turkey, Romania, Luxembourg, and Russia. Umut Eldem is currently a PhD researcher at the Royal Conservatoire of Antwerp, where gives lessons and workshops on music history, musical analysis, and audiovisual design. His current PhD research entitled 'The Hearing Glass: Synaesthetic Correspondences in The Musical Practice' intends to take the results of his previous research and develop them into an inter-sensory theory of audiovisual art.