Sound Studies and Sonic Arts

Summer Semester 2022
Phase Focus
Module Practice, Theory
Course Title **Gesture-Sound Interaction and Embodied Music Cognition** | Seminar
Course Times and Location Thursdays, 3:00 -7:00/8:00 p.m. | LIE314
Instructors **Dr. Federico Visi**
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Office Hours and Location upon request

Course Description

In this seminar we will explore the connections between sound and bodily gesture.

• Practice sessions will focus on the design gesture-sound interactions using motion sensors, sound synthesis, and interactive machine learning techniques.

• Theory sessions will focus on concepts related to the embodied cognition of sound. We will look at how body motion can help us grasp and experience some of the ephemeral features of sound and how sound may invite action.

• Embodied engagement with music is a key element of musical experience, and the gestural properties of musical sound have been studied from multiple disciplinary perspectives. Likewise, designing gestural interactions with sound synthesis for musical expression is a complex task informed by many fields of research.

• Designing and exploring gestural interactions with sound and digital media is at the foundation of established artistic practices where the performer's body is deeply engaged in forms of corporeal interplay with the music by means of motion and physiological sensing. Gesture and embodiment become the core concepts of extended multimedia practices, where composition and interaction design develop side by side, and gesture is a fundamental expressive element.

The course will be in seminar format. The first part of the seminar combines introduction to theoretical concepts related to sound and embodiment, and practical exercises in designing interactions between gesture and sound using dedicated motion sensors and software tools. In the second part of the seminar, you will work in small groups on a self-initiated project. This can be focused on putting the sonic interaction design techniques we will explore into practice, or on diving deeper into the theory topics by writing an essay on a relevant topic of choice. During this time, we will offer support on concept development, technical tutorials, as well as help you finding useful sources for your research.

It is targeted to people interested in interactive sound design, multimedia art practice, gestural interaction design for installations and performance, digital musical instrument design, and embodied theories of sound and music cognition.

After this class you will be able to design gesture-sound interactions by using a wireless motion sensors and interactive machine learning techniques and other mapping strategies in Max. You will be introduced to some of the leading theories of sound and embodiment and become more familiar with the concepts of sonic affordance, gestural sonic object, and action-perception cycle

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Requirements for Attending

Students need to have their own laptop sufficiently powerful to run most recent version of Max 8 (have it installed on your computer). Basic knowledge of Max is recommended, but not necessary.

The class is limited to 12 students.

Exam / Credit Points

2CP (not graded: Practice, Theory): Regular attendance and project presentation in class

Consecutive assignment leading to 4CP for the course - Option 1 (graded: Practice; grading: only the consecutive assignment is graded): Practical project focused on gesture-sound interaction design (material to submit: project description max. 500 words, working Max patch, instructions to operate the patch, audio/video documentation). Due Nov. 1

OR

Consecutive assignment leading to 4CP for the course - Option 2 (graded: Theory; grading: only the consecutive assignment is graded): Term paper (8,000 words) on theory and research topics relevant to the course. Due Nov. 1

Schedule

28 Apr, 15-19
5 May, 15-19
23 June, 15-20
30 June, 15-20
14 July, 15-20
21 July, 15-20

Supporting Media

Caramiaux, Baptiste, Alessandro Altavilla, Scott G. Pobiner, and Atau Tanaka. “Form Follows Sound: Designing Interactions from Sonic Memories.” In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*, 3943–52. Seoul Republic of Korea: ACM, 2015. https://doi.org/10.1145/2702123.2702515.

Godøy, Rolf Inge. “Sonic Object Cognition.” In *Springer Handbook of Systematic Musicology*, edited by Rolf Bader, 761–77. Springer Handbooks. Berlin, Heidelberg: Springer Berlin Heidelberg, 2018. https://doi.org/10.1007/978-3-662-55004-5_35.

Visi, Federico Ghelli, and Atau Tanaka. “Interactive Machine Learning of Musical Gesture.” In *Handbook of Artificial Intelligence for Music*, edited by Eduardo Reck Miranda, 771–98. Cham: Springer International Publishing, 2021. https://doi.org/10.1007/978-3-030-72116-9_27.

Holland, Simon, Tom Mudd, Katie Wilkie-McKenna, Andrew McPherson, and Marcelo M. Wanderley. “Understanding Music Interaction, and Why It Matters.” In *New Directions in Music and Human-Computer*

Interaction, edited by Simon Holland, Tom Mudd, Katie Wilkie-McKenna, Andrew McPherson, and Marcelo M. Wanderley, 1–20. Springer Series on Cultural Computing. Cham: Springer International Publishing, 2019. https://doi.org/10.1007/978-3-319-92069-6_1.

Jensenius, A. R., M. M. Wanderley, Rolf Inge Godøy, and Marc Leman. "Musical Gestures: Concepts and Methods in Research." In *Musical Gestures: Sound, Movement, and Meaning*. New York: Routledge, 2010.

Online Repository

During the course, we will set up an online repository that will be used to share code, literature, and other relevant resources for the course.