CHALMERS
UNIVERSITY OF TECHNOLOGY

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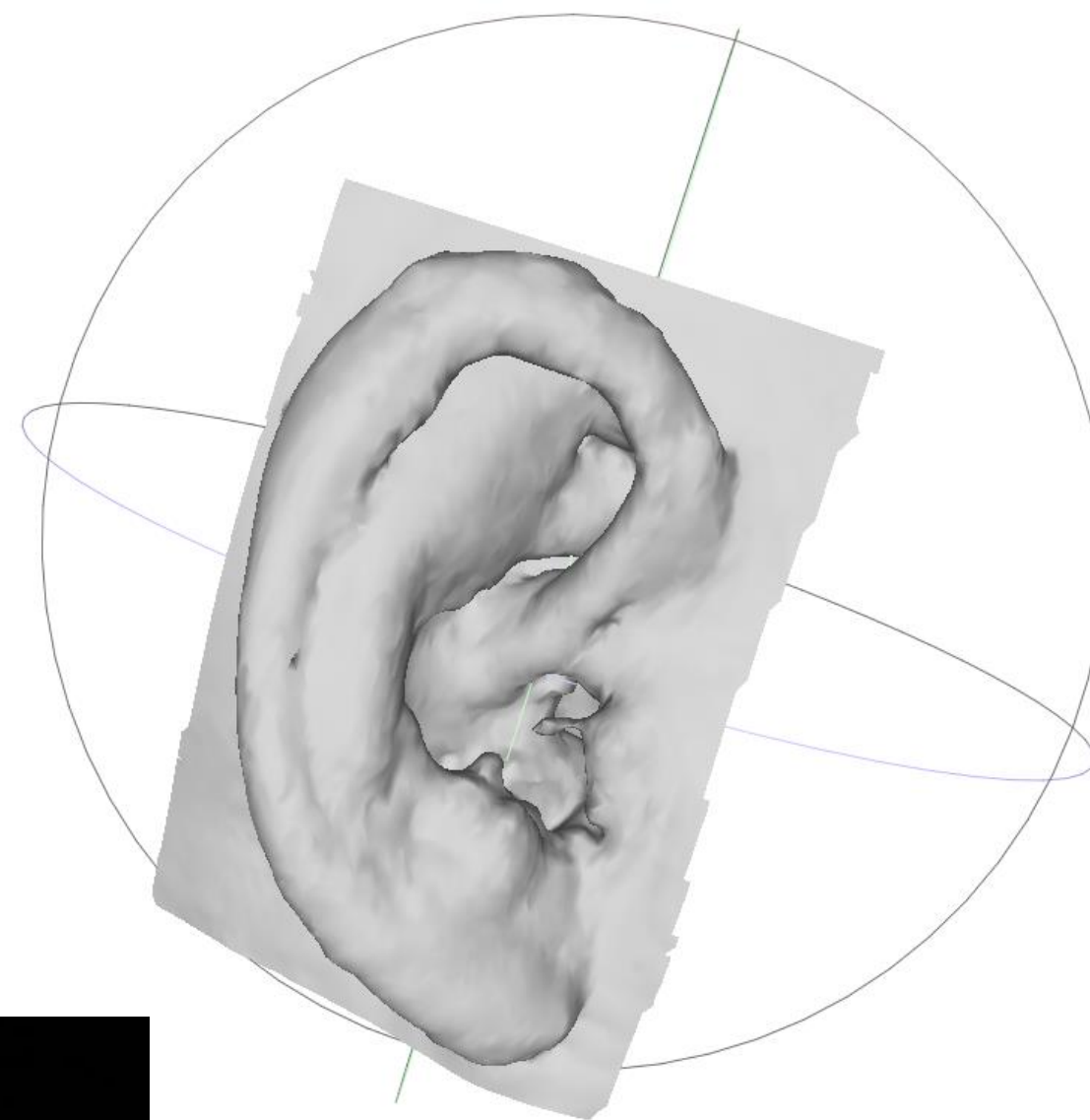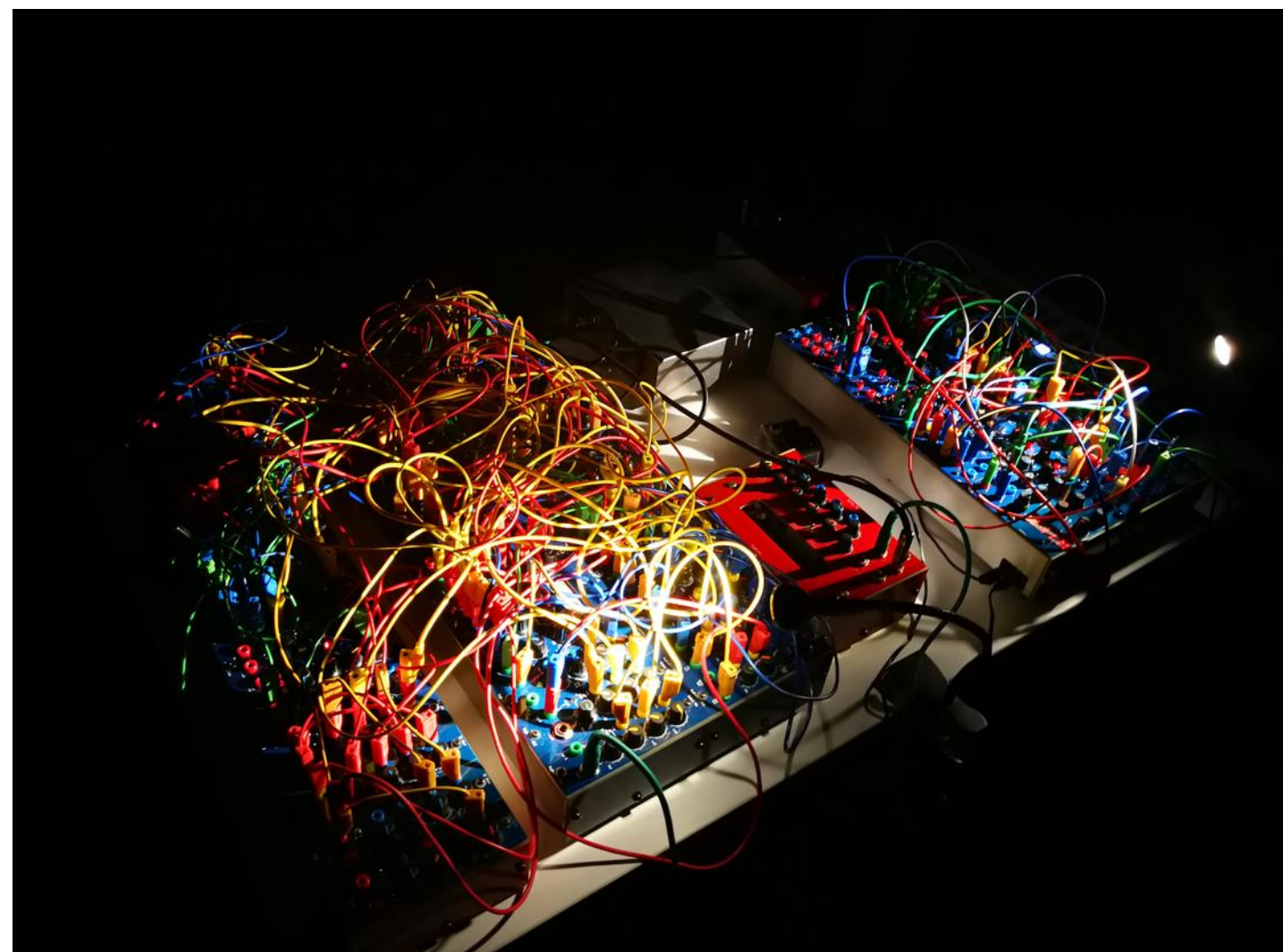Thomas Rylander
Arion Pons

TRA320 – Music Engineering

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What Music Engineering is

Music Engineering as we see it relates to anything that has to do with the creation and the perception of sound. Such sounds can be of any type. It can be conventional music, electronic music, contemporary sound art, everyday sounds like animal voices or even traffic noise, and more. It is therefore not necessary to be able to play a musical instrument to participate in a Music Engineering project.

Music Engineering projects can focus on, for example, technical or artistic aspects, material science, health and safety, electronics, composition of sound and music, or they can be investigating human sound perception. More concretely, you can build your own musical instrument, be it acoustic or electronic, you can use artificial intelligence to analyse or create sounds, or you can investigate the human physiological response to different sounds by means of Electroencephalography.

Prerequisites

As you have learned, Music Engineering project can span a broad range of topics and competences. It is therefore difficult to make an explicit list of the skills that you should be bringing into the project. It all depends on what you would like to do:

If you would like to investigate technology driven music performance, then it is useful if you have experience with music performance. If you would like to build a musical instrument, it will be useful have either crafting or programming skills. If you would like to investigate the human perception of soundscapes, then it would be favorable if you have some amount of knowledge on this.

We therefore leave it to your personal judgement if you feel qualified for the project that you are envisioning. Both Bachelor and Master's students are welcome. The projects and the project teams will be formed after the introductory phase of the tracks course (see Sec. Course Framework below). We will put particular emphasis on forming the teams such that they are interdisciplinary and that the members' skills complement each other.

Course Framework

The Music Engineering tracks course comprises 4 compulsory workshops on:

- **Acoustic Music Instruments** (Jens Ahrens, Mats Ander): Learn about the basic physics behind acoustic musical instruments, including hands-on experiments with building and playing them.

- **Electronic Music Instruments** (Palle Dahlstedt): Introduction to sound synthesis and how to control it with physical interfaces.

- **Musique Concrète: Music from Everyday Sounds** (Palle Dahlstedt): Learn how any sound from any acoustic source can be used to create music, as in the genre Musique Concrète, originating in France in the early 1950s. You will compose a small piece yourself, to be performed in a mini-concert.

- **Human sound and music perception** (Alf-Erik Almstedt, Thomas Rylander): Introduction to how we perceive sound and music, both low-level phenomena such as pitch and loudness, and more high-level musical phenomena such as timbre and swing.

The teams will be formed, and projects will be defined after completion of the workshop phase. There is no strict deadline for completion of a project. All projects will be presented in during a dedicated exhibition/performance event.

The course will start in mid January 2025 and will cover both the 3rd and the 4th study term.

Supervisors

Mats Ander, Alf-Erik Almstedt, Jens Ahrens, Palle Dahlstedt, Thomas Rylander, Arion Pons

How to Apply

We have to limit the number of students due to practical reasons. Apply for the Music Engineering tracks course on

https://www.antagning.se
(search for TRA320, Swedish title "Musikteknik: Ljuduppfattning")

and upload a personal motivation letter not longer than one A4 page. The deadline for applications is October 15, 2024.