Open CUBE

Postmodern Synthesis
Tom Mudd

Donnerstag, 04.05.2023, 19:00 Uhr, IEM CUBE, Inffeldgasse 10/3, 8010 Graz

In Zusammenarbeit mit der Gesellschaft zur Förderung von Elektronischer Musik und Akustik – GesFEMA

This performance blends two perspectives on digital synthesis. Firstly a dynamical systems notion of sound generation, and secondly a physics-based modelling perspective.

In the former, mathematical models are implemented at a sample-by-sample level to create a rich, unpredictable and explorable synthesiser. This approach is used in the **Gutter Synth**, which couples Duffing oscillators to banks of resonant filters. The resultant sounds can feel quite acoustic both in their sounds and their behaviours, and the approach to the synthesis has something in common with physical models.

The second perspective on digital synthesis comes from physical modelling more directly: employing the Brass and Guitar models developed by the Next Generation Sound Synthesis (NESS) project.[1] Physical modelling synthesis involves the simulation of acoustic or electronic instruments based on an analysis and implementation of the underlying physics at play: e.g. the movement of a string, the behaviour of a reed, the response of a circuit. Physical modelling synthesis can often become bound up in a scientific, rationalist, modernist narrative of progress in music making: furthering our understanding of both the material aspects of musical instruments, and of algorithms to efficiently simulate these instruments. As the models become increasingly sophisticated, the actual sounds they make can pull in the opposite direction: a very basic trumpet simulation may only be capable of playing smooth even notes, whereas a very sophisticated simulation can be very difficult to control usefully, with the possibility of a wide range of squeaks, rattles, breath noises, and other sounds that seem to move away from a smoothed out, rational, grid-like conception of music. The more sophisticated the model, the more there is scope to make very clumsy, imperfect sounds that might be heard as amateurish or child-like. I hear this as an entertaining contrast with the modernist, scientific, futuristic

1 http://www.ness.music.ed.ac.uk/

presentation of physical models, and enjoy exploring that contrast in both the guitar, but particularly the brass sounds.

The digital implementations of the physical models are very close in many ways to the implementations of dynamical systems as synthesis processes, as they are usually framed as approximations of differential equations. The brass synthesis in particular has much in common in the actual sound world and behaviours: similarly unstable and chaotic. This work can be found on the Brass Cultures release: https://tommudd.bandcamp.com/album/brass-cultures. A follow up Guitar Cultures release is due later in 2023.

This performance will explore the Gutter, Brass and Guitar material. It will incorporate a mixture of pre-existing pieces made with the physical models, and live improvised playing, particularly of the Gutter Synth, but also weaving together smaller fragments of the physical modelling material.

Gutter synth can be downloaded here:
https://github.com/tommmmudd/guttersynthesis

Or a slightly buggy browser-based version is available here:
http://tommudd.co.uk/feedback/7-guttersynthcontrols/index.html

The synth was used on the release of the same name: Gutter Synthesis
https://tommudd.bandcamp.com/album/gutter-synthesis

Open CUBE – Kalendarium

23.05.2023 19h00 –   Paulo Chargas CUBE Lecture :"Klang, Wahrheit und
Paradigma: Das elektroakustische Paradigma"
Open CUBE "Migration und Metamorphose"

20.06.2023 14h00 –   CUBE Lecture - Thomas Gerwin
„Sinn und Präsenz in konkreter Musik"

20.06.2023 19h00 –   Open CUBE - Thomas Gerwin
„PHENOMENON"

03.07.2023 17h00 –   Open CUBE – Semesterkonzert
Studierende der Computermusik und Klangkunst
präsentieren ihre Semesterarbeiten

Details zur Open CUBE Konzertreihe unter:

https://iem.kug.ac.at/veranstaltungen/veranstaltungsreihen/open-cube-cube-lecture/