chair.audio

<: International Faust Conference (IFC-18) :>

Björn Kessler

Compiled on July 15, 2018

Gefördert durch:

Bundesministerium für Wirtschaft und Energie

aufgrund eines Beschlusses des Deutschen Bundestages

eXIST Existenzgründungen aus der Wissenschaft

Europäische Union

ESF Europäischer Sozialfonds für Deutschland

Zusammen. Zukunft. Gestalten.

neudeli

Bauhaus-Universität Weimar

Who is chair.audio?
Team

Sebastian Stang
Computer scientist, embedded Linux, kernel extensions
Software, firmware & drivers

Max Neupert
Industrial designer, media artist
Design, strategy & media

Clemens Wegener
Musicologist, computer scientist, musician
Research and development

Contributions
Team

Philipp Schmalfuß
Application Development, Pure Data patches

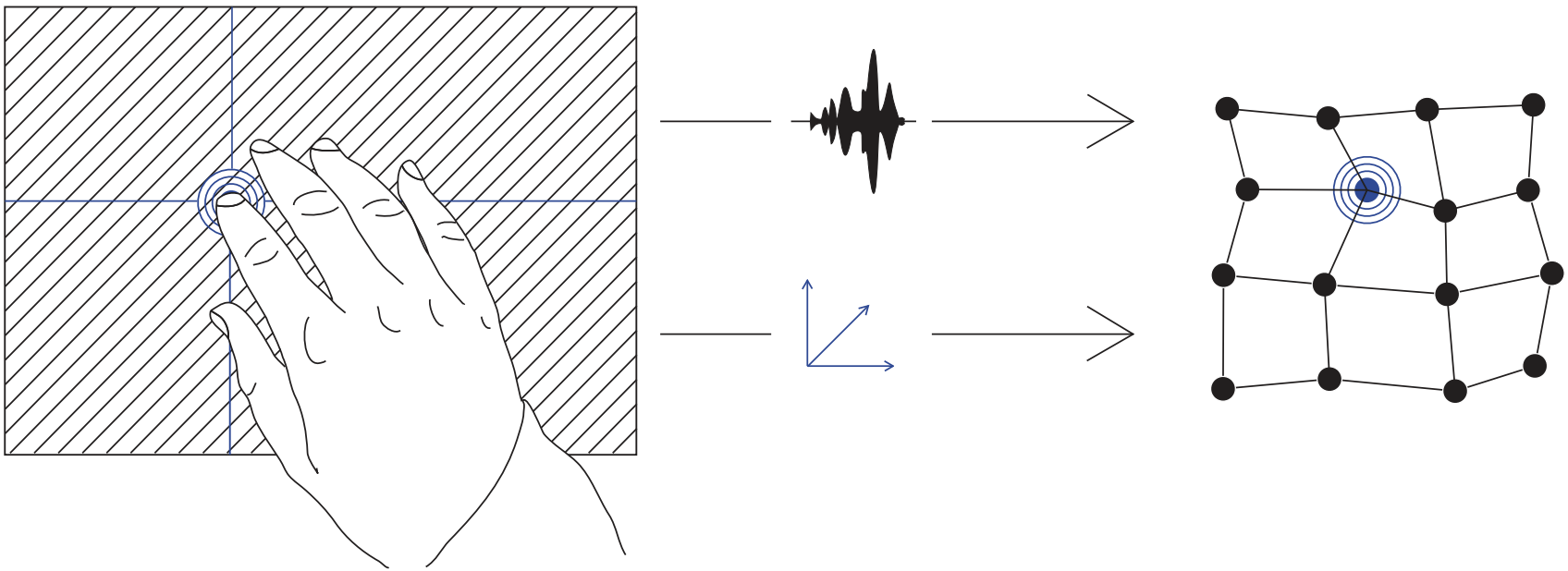
Björn Kessler
Application Development

Our Vision

chair.audio

chair.audio is making digital instruments with analog interfaces. Our mission is to make sounds tangible. That's why we are developing instruments with haptic interfaces for electronic sound - both analog and software synthesis. Our Instruments have excitable surfaces that you can scratch, hit or bow.

Current state
chair.audio



Goals

- Intuitive quality of interaction (acoustic looking glass)
- Fine tactile control for making electronic sounds
- Wide range of possible timbres and mapping flexibility

Prior Art

chair.audio

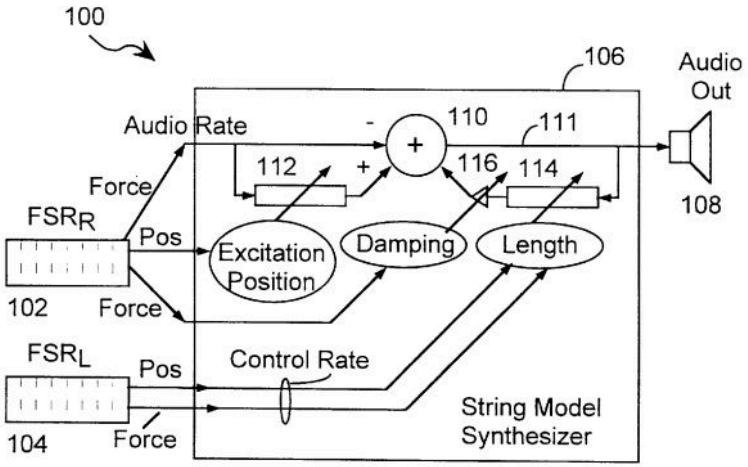


FIG. 3

Prior Art

Remutualizing the Instrument: Co-Design of Synthesis Algorithms and Controllers. By Perry R. Cook.
In: Proceedings of the Stockholm Music Acoustics Conference, August 6-9, 2003 (SMAC 03), Stockholm, Sweden

System architecture

chair.audio

Cypress PSoC5 Firmware → Device driver → Pd external

- libusb implementation
- Linux kernel module implementation (GPLv3)
- Pure Data external
- MacOS and Windows drivers (closed source)

Sound synthesis

chair.audio

Synthesis models currently implemented

- Frequency Modulation
- Filter banks
- Granular and concatenative synthesis (`timbreID`)
- Physical modeling (with `pmpd~`)
- Physical modeling (with Synth-a-modeler, SaM-Designer)
- Physical modeling (with Faust's physmodels.lib)

Fork of SaM-Designer

chair.audio

Synth-a-Modeler by Edgar Berdahl and the SaM-Designer by Peter Vasil have been forked to make compilation more straight forward and make use of recent versions of JUCE and Faust:
https://github.com/chairaudio/SaM-Designer

Faust's physical modeling

Faust's physical modeling synthesis is easily made usable for chair. The "excitation" part of the models is stripped off and replaced by the acoustic signal of the device. One or two parameters can be controlled through "After-Touch"

Crowdfunding

chair.audio

Timeline

- Starting now: Limited sale of pre-series instruments (~10 items)
- December: Crowdfunding for next generation multitouch model