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Multi-dimensional sound exploring: Using Leap motion to support divergent creative processes while searching for the right synthesizer sound

Leap motion is an affordable and easy to use tool to track the motions of the user's hands. It is widely used to control musical software. Mostly it's being used for live performances e.g. to perform filter-sweeps or to alter the volume of a certain audio-track or instrument just with the movement of the hand(s).

While you find an increasing number of applications for music performances there are only few examples of how a motion tracking device like Leap motion can support music composers in the process of creating new sounds. This poster presentation (accompanied by an early-stage prototype developed in Chuck[1]) shows ways how Leap motion can be mapped to 10 or more parameters of a synthesizer at the same time for users searching for inspiration. This project especially focusses on supporting divergent thinking processes which are used to generate new ideas by trying out many possible solutions and exploring a wide field of options. One of the simplest solutions to support divergent thinking processes in sound exploration is the 'random button' which sets all parameters of a synthesizer to random values. This can be a simple and yet effective solution but leaves a lot to chance. Instead of letting a button randomly decide on a configuration of all your synthesizer parameters: What if every possible sound of your synthesizer would be located somewhere on an imaginary 1x1x1 meter cube right in front of you on your desk? What if you could explore the entire soundscape by moving your hand through this cube?

In the current stage of the project the following set of problems are being tackled from the technical and usability perspective:

- Dimension reduction: How to map 10 or more synthesizer parameters to [actually] 6 dimensions (hand position: x, y and z axis, wrist turning, thumb bending and bending of any of the other four fingers)
- Smoothness: How can the movement through the soundscape-cube be as smooth as possible without any large sound-jumps, -gaps and -glitches.
- Support the creative process: Which additional features are beneficial for sound creators? E.g. Excluding certain parameters from the motion tracking, a continuous undo slider or different ways of visual feedback.

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[1] chuck.cs.princeton.edu