CSC 475 Music Information Retrieval Hector Perez V00794415

Assignment # 4

Question 1: Tangible music interfaces.

Summary of Categories chosen (3) :

a) Tangible Musical Artifacts.

Description: These are very varied objects that change the sound depending on the user interactions with them. They are interesting in that they act as normal life objects - bottles, blenders, rubik’s cubes etc. The interactions are very natural.

Why is it interesting: They are different because they are less compartmentalized than other tangibles - small number of objects are needed to create the sounds. The interactions are very unusual. Three called my attention in particular. The audio shaker captures sound and then changes the sound depending on the movement of the shaker - treating the sound as if it were a ‘liquid’ affected by gravity. Another example are music bottles, which allow the sounds to be audible if they are ‘uncorked’. A ‘blender’ detects what ‘fruits’ (which are digitally tagged) were put into it, and generates sound based on this.

b) Token Based Sequencers

Description: These seem to mostly be sequencers that play sounds (musical notes/drum samples) depending on the placement of bearings/tokens in a base (ranging from metal balls to M&M's). The position of the bearings changes the pattern. The interfaces are designed to be very intuitive.

Why is it interesting: Nowadays, drum machines/ pattern creators are common in Digital Audio Workstations. What is interesting about these tangibles is that the interactions are very different.

Besides just having an on/off for each note in the patterns, other forms of control are available: sliders for volume, timbre and rhythm of notes. Some tokens/bearings are different from others and can make the sequences more complex. Different sensors are used to determine the activation of patterns. Some of these are able to be connected with software. This changes the way music is created, because users are controlling music with more ‘natural’/ ‘physical’ actions.

c) Musical Toys

Description: These tangibles incorporate many characteristics of the other tangibles. Parameters of sound are controlled by very simple objects - blocks and switches. Their design makes them seem accessible for younger users. They give a lot of power to the users.

Why is it interesting: They are designed to be very simple for users, such as a child could control it. I believe this has great potential, given that if children learn how to use these tangibles, they might become familiarized with the interactions, and create more expectation for this kind of technology in the future.

Question 2: Proposition of a tangible interface using MIR tasks.

Idea 1:

We have studied about the fourier transform and how sinusoids of different frequencies at different phases combined make up a sound. An interface could be created using an artifact that picks up a sound and obtains the frequencies and phases for the sound, and then picks the ten greatest peaks to resynthesize the sound. Then a series of tokens can be disposed in a pattern, and they would play a melody/sequence using the synthesized sound. This could be particularly strange, since the sounds being captured would not necessarily be musical in nature.

Idea 2:

We have learned about beat extraction and tempo extraction from a sound signal. I think that an interesting combination of everything would be a series of artifacts that capture the beats and tempos of patterns clapped to them. The artifacts can be used as tokens placed on a surface to generate more complex rhythms. The horizontal position of the artifacts would dictate the way in which the beats/tempo they contain are combined. It would be good that the user had control over what drum component would be reproducing the sounds (a kick, snare or hi-hat,etc), and this could be controlled by the vertical position of the artifacts.

Perhaps instead of the user managing everything, the system could automatically rearrange the tokens to generate an appropriate pattern. It would be nice if it could be connected to software.

This kind of beat creation contrasts with what is normally used in a DAW, because it would be more fast paced. Usually in a DAW, MIDI patterns must be manipulated meticulously to generate the beat.