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EECS 481, F15

Project Proposal

For my project, I would like to use the textile technology that has been introduced to us to create a tactile, interactive, and social experience for children with autism. Like the coloring project, I would need a sheet of knitted textile, but the dimensions that I would picture would be closer to 3 feet tall by approximately 10 feet long, either against a single wall or wrapping around a corner.

I would like to project musical instruments onto the wall that the children would be able to interact with. The three that I am thinking would be a keyboard, a drum set, and a harp.

To create extra tactile sensations, I would like to make use of the knitting technology that is available to us. For the harp, for example, I would like the strings to be ribbing in the fabric. I would like the outline of the keys to be pronounced in the cloth, and the drum set I would like to create different textures on each drum- perhaps circular ribbing on the cymbals, for example.

There would be a few different modes to this project. In one, each key that is pressed, drum struck, or string strummed would create a single sound that matches whatever the child pressed. It should mimic how a keyboard, harp, or drum set would sound. The depth at which the child presses should correspond to the volume of the sound and different instruments should all be able to be played at a single time, with each sound emanated matching what the child has done, so that they mimic real life instruments but add the interesting textures of the fabric for added sensory stimulation. This mode should support multiple children playing at once.

In another mode, pressing on different parts of the instrument should cue different songs or short musical pieces to play. For example, pressing the higher end of the piano should cue a

short, higher register interlude. Pressing the lower end should cue a lower song. Strumming the harp quickly should generate a fast song, slowly a more relaxing song. This allows the child to control the sound of their environment without having to manually produce each sound. I would imagine different visual animations emanating from each instrument as they are pressed. Playing two instruments at once should play a new song, one that incorporates both of those instruments, and the animations from those two should play off of one another. These animations can become gradually more engaging to watch, and the songs longer and more rewarding to hear and create. Lastly, if all three instruments are played at once, it should play a significantly longer piece with animation all over the screen, incorporating the different animations that the child has seen so far from each single instrument. This should be the 'goal' of this mode and the reward that the child seeks.

I would envision the child being able to press two instruments at once, and hopefully them seeing the two instruments play together should engage their curiosity to see what happens when all three are pressed. This would require another person to get involved with the musical screen, requiring a minor (but important!) social interaction.

The technology that I would need would be the same as what was needed for the coloring project, and would need to sense touch and depth of touch, provide animation, and audio.

