Stephen Round
Interactive Media Design
Project 1

The Sculpture

The sculpture, made of four ring shapes, spins along its Y-axis on the desktop. Constructed in just 50 lines of code, it is a reactive program that changes based on the user or the environment the program finds itself in. It will shrink with noise as well as become more blue, as the two values of the camera's Z position and the sculpture's blue value are both tied to the variable that captures sound from the devices microphone. On mobile devices, it rotates along its X- and Z-axes by turning the phone, activated by the phone or tablet's gyroscopes. It's built using p5.js, a mixture of Javascript and Processing.

Originally, I was spouting ideas, so in class I said something about a simple game being the focus of this project. I've learned pretty quickly that I don't do games very well using p5. Instead, I had an idea for a piece of art that would look at the user, so to say, as the user looked at it. The way it would look at the user is by altering its appearance. In this case, altering its appearance through a hands-free element—the microphone—would be the vision of the program, or how it would see the outside world and be able to react to it.

During development, I had some interesting things happen. I built the ring shape in class using the 3D shapes in p5, and stuck them in a for loop to create a bunch in one spot. Getting them to spin was simple enough, multiplying the rotate values by a thousandth of the current frameCount. While trying to experiment with the phone rotation compatibility, I ended up making the sculpture unravel itself whenever the phone tilted, looking like a string of ring shapes. This was a step in a semi-right direction, but I decided to make the structure stay together and roll in place instead.

The Features and Limitations

The features of this program include the usage of the microphone, which is grabbed through a simple audioIn() function in the setup. In the draw function, the variable "level" is created to contain the current amplitude level of the microphone's recordings. The level, multiplied by 1000 so it becomes an easier number to work with, is then assigned to the camera's Z position to give the illusion of shrinking, and to the blue value in the color of the sculpture.

Another feature of this program is the ability to change color depending on the mouse position/microphone levels. This is swiftly achieved by assigning mouseX and mouseY variables to the red and green values of the color. This is the only hands-on feature of the sculpture, and if I could, I would incorporate a webcam element to color the sculpture based on what the device sees.

The final feature of the program is the ability to turn based on a mobile device's orientation. The p5.dom has a multitude of functions that go beyond the screen, and tracking gyroscopic motion is one of them. The rotation of the Z- and X-axes is tracked through a rotationZ/rotationX variable respectively. On a desktop, these are simply zero, and the sculpture doesn't spin except on its Y-axis. On a phone or tablet, however, the movement of the device will move the sculpture as well. This was a largely arbitrary addition, but it's another layer of hands-free (or in this case, fingers-free) interaction.

The limitations of this program are numerous. It doesn't do much besides its intended purpose, and will certainly not maintain attention for a long time. It doesn't involve the webcam like I originally desired, but I didn't want the program to become too intrusive. It doesn't have a customizable element where you can choose the number of rings. An initial idea that didn't end up making it in the final is that the sculpture doesn't roll like a ball on mobile devices. It ended up being much more difficult than I thought. Instead, I left the gyroscopic element to spin the ball.

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The Interaction

The interactive component of this program involves the input of the user and the reaction of the sculpture. In a less technical sense, the program is a time-waster. It is designed to alter itself to the sonic environment it's in. The user doesn't really get anything in return from it, except for a result. In this sense, the interaction is minimal, but still there. It's not a game with difficulty or a goal, but a piece of art that differs for each viewer. The viewer turns their phone, or moves their mouse, or views in a noisy café or somewhere, and the program creates a visual representation of these actions.

The Future

How could this program evolve, or be utilized in the future? For starters, I would like to push all the failed concepts to make a more complex and hands-free sculpture, more easily manipulated by the user. Other than that, I could see this simple structure be used for something like an AI's face, which would certainly increase its interactivity tenfold.

In all honesty, I have no interest in pushing this design further. I feel it's a nicely contained program that does what it needs to do, what it's coded to do.

Conclusion

This program, titled simply "Sculpture", is a simple study of how a program can react to its outside environment. It can't do anything without a user to look at it, and the user gains a different experience from it each time. It is a very basic form of interaction, and has a small enough code to easily push it further if anyone wants to.