*Florida International University*

*School of Computing and Information Sciences*

CIS 4911 - Senior Capstone Project

Software Engineering Focus

Shortcomings and Wish List

Multi Modal Interactive Paint

Team # X

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**Shortcomings**

This document will go over the Shortcomings, as well as a wishlist for the future of our Multi Modal Interactive Paint application.

First and foremost the application is fairly CPU heavy. Due to using various devices as well as sometimes CPU intensive line drawing, so we may have various performance drops.

One specific instance is drawing multiple lines at once.

When we use many fingers at once, mostly notable at 5 and more fingers, we can see that lines become sharper. This is because we lose touch inputs, we can probably improve performance slightly by buffering our touch inputs.

The Real Sense Device also causes a lot huge drop in the framerate of our program (45+ without draw and expressions disabled, dropping to 15~ wish both enabled).

To remedy this we would like multithreading implemented into the program to improve performance, not only for the real sense but for the application as a whole.

In addition we are currently using 3 Infrared devices, the Tobii EyeX, the Leap Motion Controller, as well as the Intel Real Sense Depth Camera.

These three devices have infrared fields that interrupt eachother. Running the tobii in combination with either of the two devices can cause some massive disruption with reading user input. The Real Sense and Leap motion also interrupt input, but on a much lower scale. So we have to be careful with where we place all the devices (they work if the fields don't overlap).

The real sense also has some issues. The drawing field is very hard to draw on the entire screen.

In addition making text Uniform throughout the application, I think, would be beneficial and make the application look much nicer. The text, most notably in the device modes menu, is stretched to fit the space, rather than writing in a uniform text.

**Wish List**

As For the Future we hope to integrate even more devices into our application.

Input such as Speech Recognition, as well as 3d Cameras, that do not use Infrared, would be very beneficial.

We also believe the application is in dire need of a tutorial system and features to indicate whether or not you are being read by the devices.

The devices are fairly hard to use, and it's even harder when you don't know if the Real Sense is detecting your face. Adding a tutorial to show you how to use the devices inside the application, as well as feedback for when the real sense detects your face, would be highly beneficial to our application.

The tutorial system could also provide gamified elements, such as a point or achievement system for performing the tasks, increasing the likelihood that children and students want to complete the tutorial.

You can also go another direction, increasing the painting capabilities. We could implement a color wheel to change between more than just our default colors, as well as Active Pen support to make the drawings more precise on the touch pad. Shader effects could also be interesting, such as making the screen go gray scale when you kiss, or inverting the colors by some other method.

Finally, The Real Sense has Eye tracking that could be implemented as well, although it is much worse than the EyeX, it could still provide basic UI pull up functionality.