# Hamulizer

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I. Installation (Computer)

Hamulizer uses two external applications for Midi support: OSCulator and TouchOSC Bridge. Before running the visualizer applet, it is necessary to have both these applications running. The installation files osculator-2.13-15-ge0ad16b.dmg and touchosc-bridge-1.2.0-osx.zip are included in the Setup folder.

After ensuring both these applications are running, open the Mouse Pad file in the setup folder. This should open in OSCulator and immediately start listening for Midi input. You can be sure TouchOSC Bridge is running by observing the icon in the menu bar:

II. Installation (iPad)

The TouchOSC iOS app is necessary to control the visualizer and can be downloaded from the App Store. Once it is installed, the VisualizerController.touchosc must be transferred to the iPad. This can be done through iTunes or through the TouchOSC Editor Mac App. With iTunes, make sure the iPad is connected and click on your device in the side-bar under Devices. Navigate to the Apps section of the iPad (between Summary and Tones) and scroll down to the File Sharing section. Click on the TouchOSC app in the list of available apps to view the TouchOSC Documents. From here, you can drag and drop the VisualizerController.touchosc file into the list of Documents.
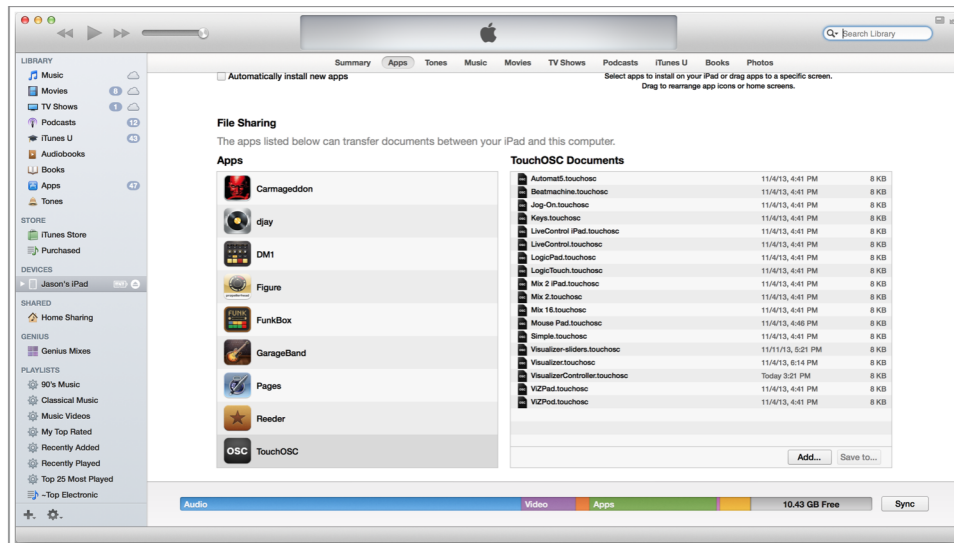
With the TouchOSC file installed, you can now begin to setup the TouchOSC iOS app. First, ensure both the iPad and the Computer are connected to the same WiFi network.

A Note on WiFi

Due to the security systems and structure of Hamilton College's aps-hamilton network, it will not allow communications between the TouchOSC app and the computer. Be sure to use a normal home/personal WiFi network or create your own through the computer's WiFi settings.

Configuring the iOS App

There are three different settings that need to be configured before we can start using the controller. The first is the OSCulator connection at the top of the screen. Tap the first "OSC:" pane to get to the next configuration screen:
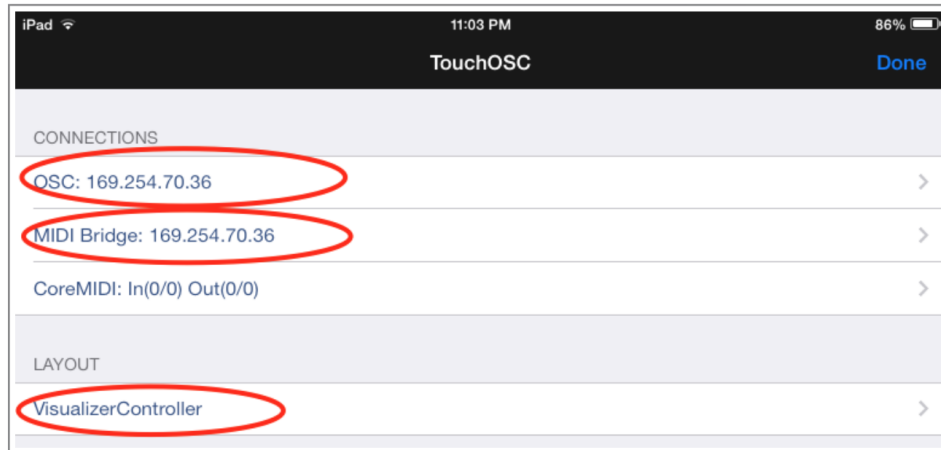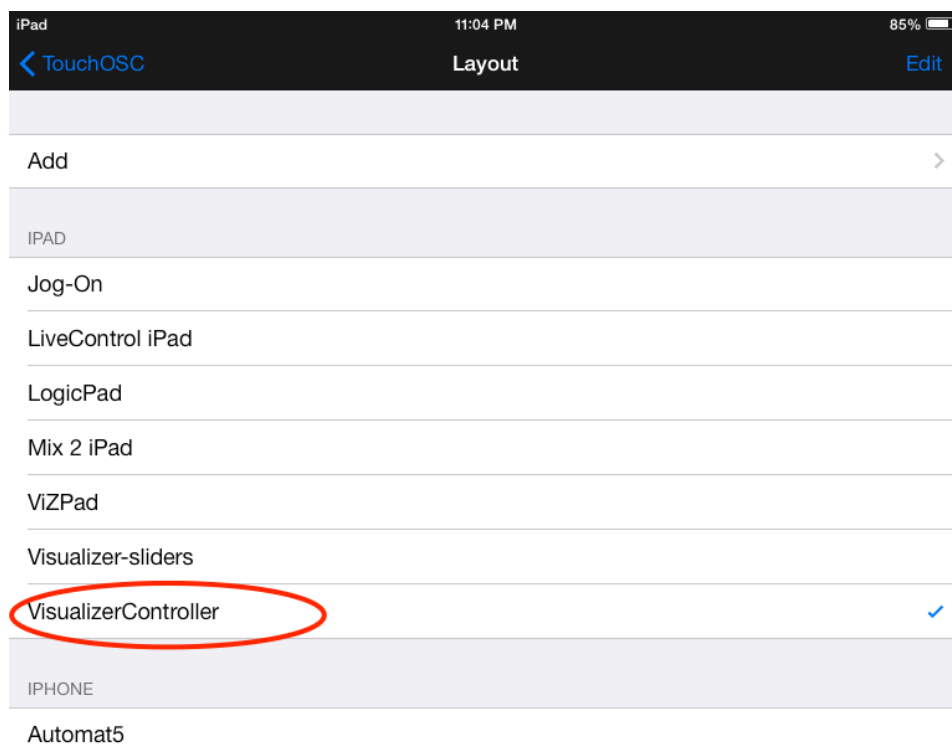
Tap on your computer's OSCulator connection and the app will automatically fill in the correct IP address and Ports.
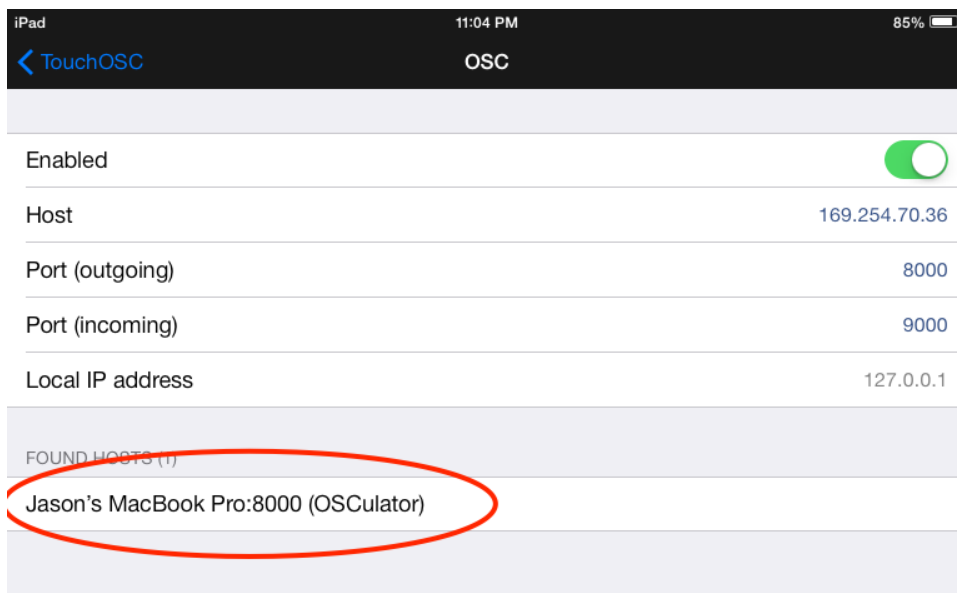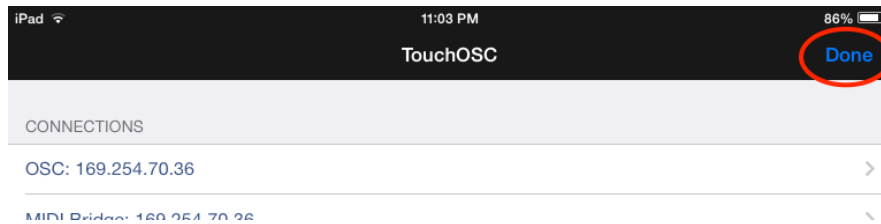

The second setting is the Midi bridge. Be sure this is enabled and tap on your computer's name under Found Hosts:
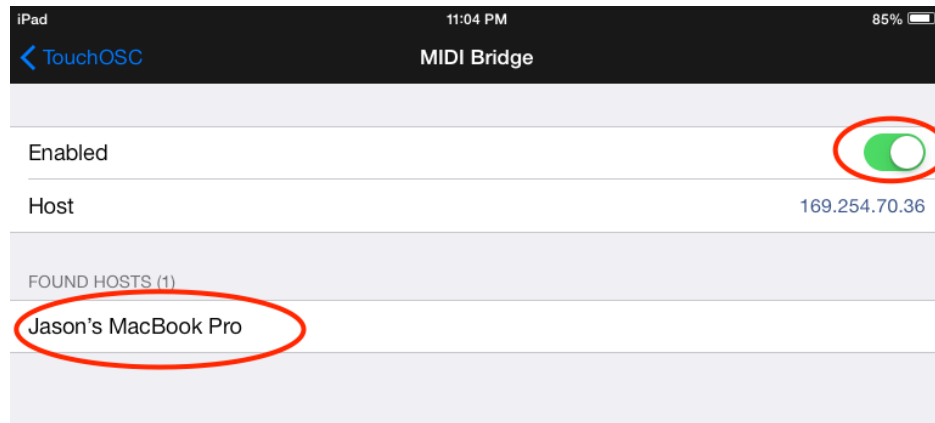
Finally, we will select the VisualizerController layout from among the built-in layout:

With this correct configuration, we should now be able to start the controller:

III. Getting Started

To open the application, double-click the "Visualizer.jar" Executable Jar File within the Hamulizer folder.

Once the application opens, you should see a screen like this:

To begin experimenting with the application immediately by using the default images, click on "Use Default". To upload your own images, click on the "Upload Images" button. Uploading images shall be explained in detail in the next section.

IV. Uploading Images

Hamulizer has 7 image processing slots. This means that 7 images can be loaded to process at once. If less than 7 images are uploaded, the remaining slots will still be filled by the default images. When uploading images you should come across a window that looks like this:
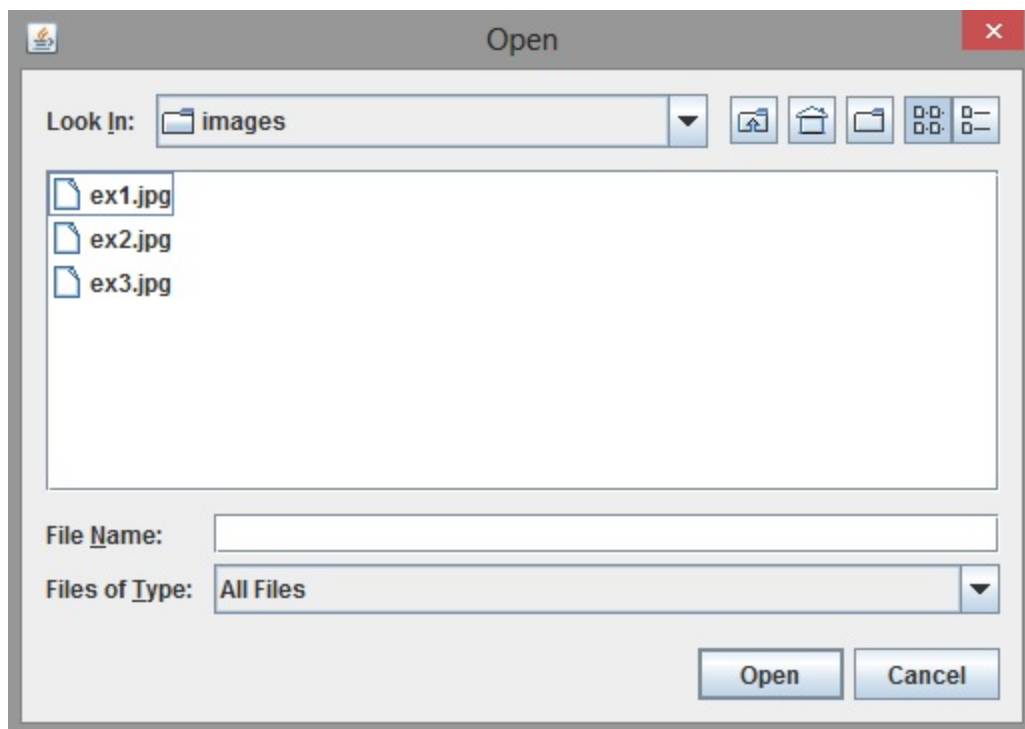
To upload an image into an image processing slot, browse to the location of the image you would like to use. Select the image and click "Open". To upload several images there is a specific process detailed on the next page.

To upload several images into image processing slots, browse to the location of the images. They must all be contained in the same folder. Then when selecting an image, select all images to be processed (by using Shift-Click on Mac, and Ctrl+Right-Click on Windows), and then click "Open". When loading several images, they are loaded into the image processing slots in alphabetical order (using their file name).
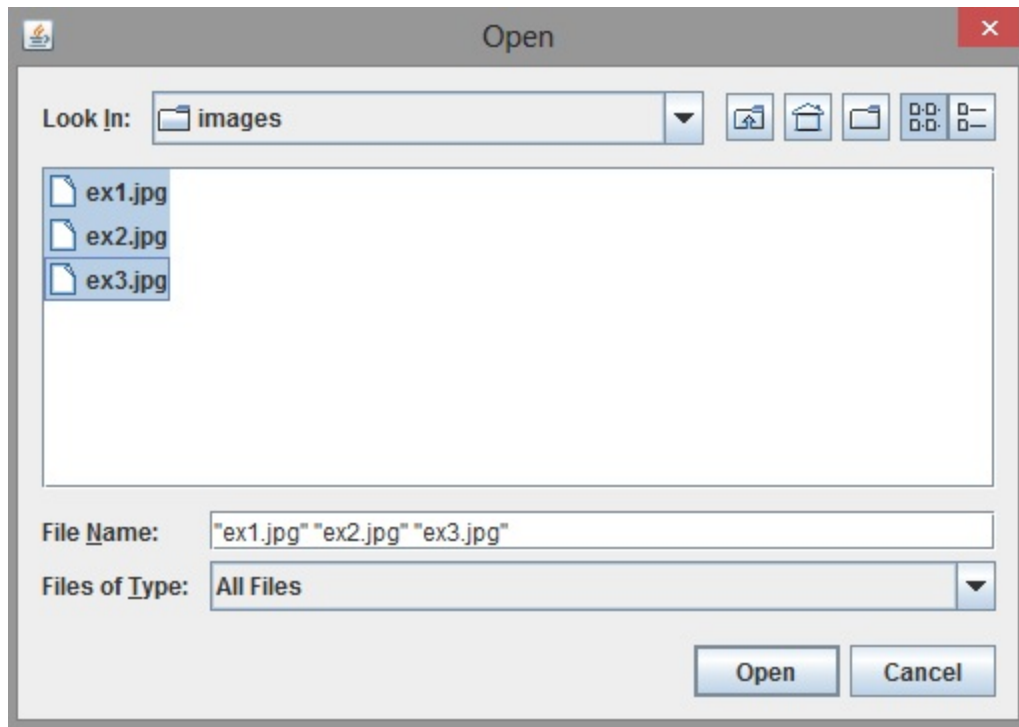
Once an image is uploaded, you can set the threshold for edge detection and preview the edge detection before beginning to process the image(s).

V. Edge Detection

Hamulizer uses canny edge detection to select "significant pixels" from an image. Significant pixels are essentially the pixels with high contrast. When setting the threshold for edge detection, you should be looking at a window like this:
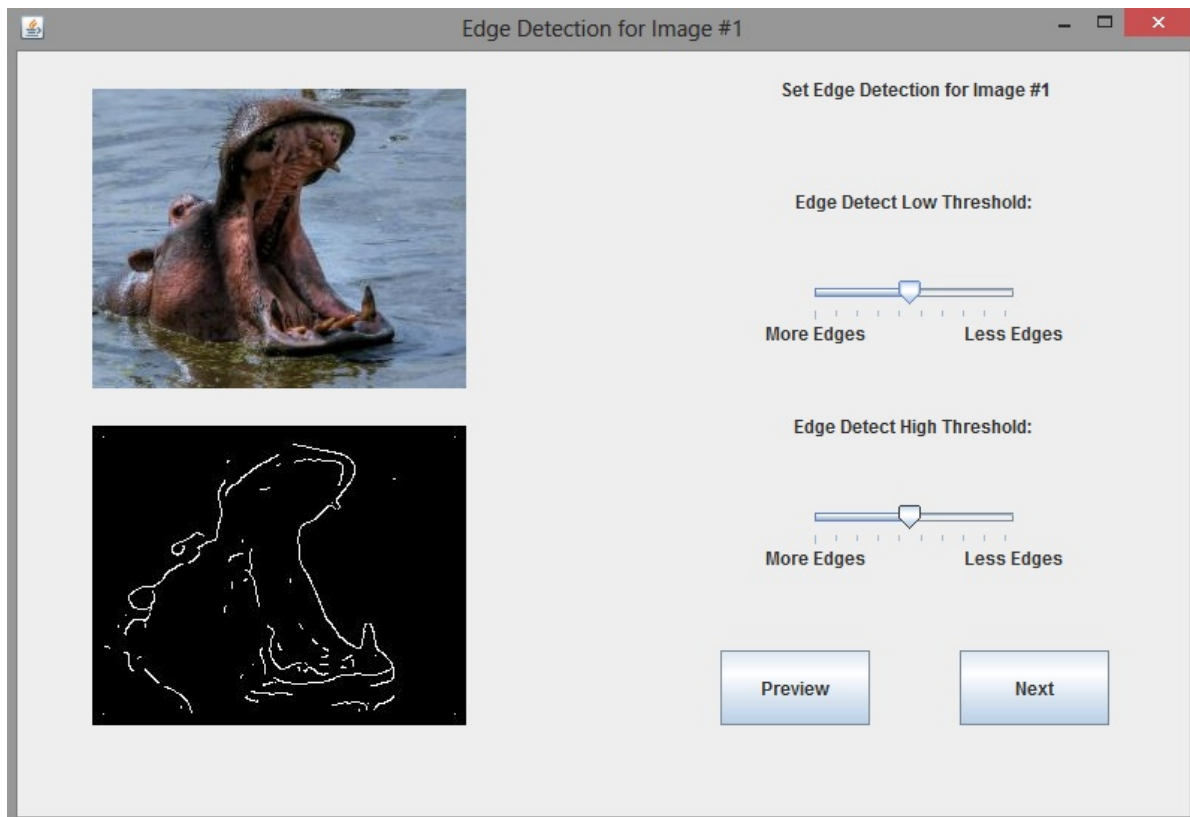
Every image has different optimal edge detection thresholds. You can mess around until you find a good preview. If you are looking at a preview with a lot of highlighted pixels, the processing will not run efficiently. On the other hand, a preview with fewer highlighted pixels is more likely to work efficiently.

Below are two previews. The one on the left shows that there are too many significant pixels selected, and the on the right should run efficiently (although having a bit more pixels than the preview on the left should also work well too).
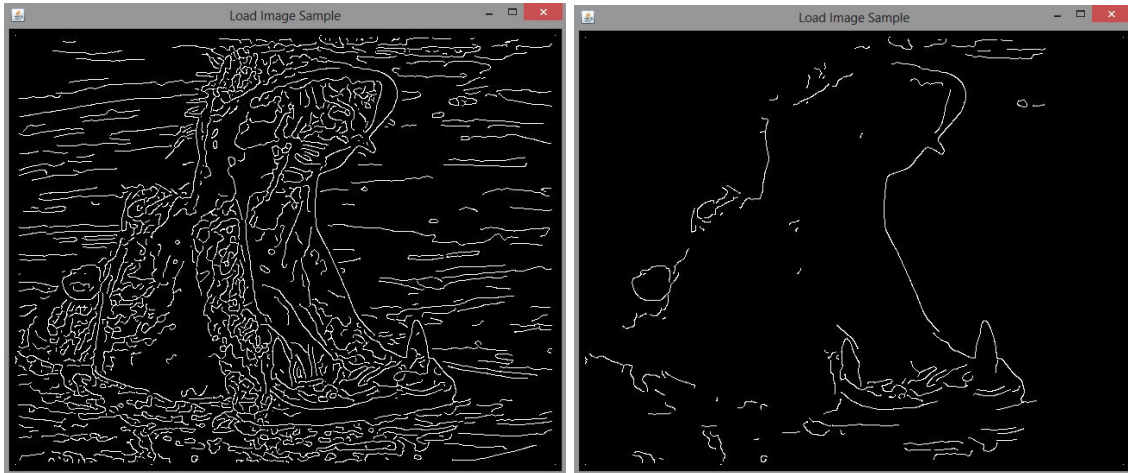
Once you are comfortable with the edge detection, you can click on the "Next" button, and repeat the process of edge detection for all uploaded images. Clicking on the "Next" button after the last uploaded image begins the application.

VI. Controls & Features

Hamulizer is designed to be controlled by TouchOSC and OSCulator for iOS but can also be controlled by keyboard and mouse as well. The documentation will list each feature, the key(s) associated with each feature, and how to use each feature. We recommend using the TouchOSC for iOS instead of the keys for a much more fluid experience. Below is an image of the TouchOSC controller.
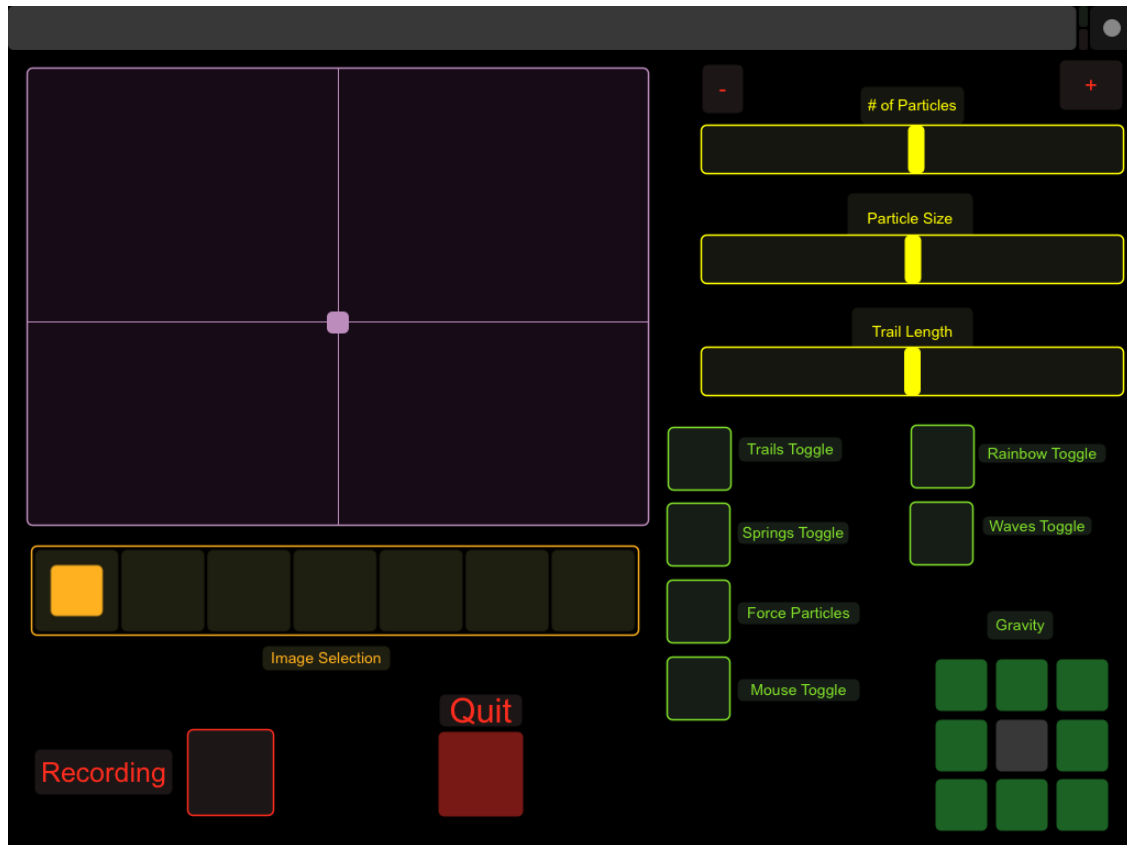
Features:

Escape

> Key: Esc
>
> Info: The "Esc" key exits the application.

Springs

> Key: P
>
> Info: "Springs" is one of the main features of the application. The "Springs" feature allows for the particles to spring back to their original spot. This feature is on by default may be disabled and enabled using the 'P' key. When "Springs" is toggled off, the particles will free float around the canvas.

Mouse

> Key: M
>
> Info: The "Mouse" feature is another key feature of the application. This feature allows for the user to repel particles away from the mouse. This feature is also on by default but may be disabled and enabled by using the 'M' key.

Image Transitions

> Keys: 1, 2, 3, 4, 5, 6, 7
>
> Info: The "Image Transitions" feature allows the user to transition processing between two or more (up to 7) images. By clicking the '1' key, the user can transition into processing the image in Slot 1, and so on for the rest of the numbers.

# of Particles

> Keys: Up and Down
>
> Info: The "Particle Amount" feature allows the user to control how many particles (pixels) are being processed. 'Up' increases the amount of particles and 'Down' decreases the amount of particles.

Particle Size

> Keys: [and]
>
> Info: The "Particle Size" feature allows the user to control the size/thickness of the particles (pixels) being processed. '[' raises the particles' sizes and ']' lowers the particles' sizes.

Force Particles

        Key: F

        Info: The "Force Particles" feature allows the user create four seperate particles that bounce around the screen, pushing all other particles they come across. This is an On/Off feature, so pressing 'F' again will remove the four force particles.

Trails / Trail Length

        Keys: T, -, =

        Info: The "Trails" feature allows for the processed particles to leave an trails behind as they move around. This is also an On/Off feature, so pressing 'T' a second time will remove the trails. '-' decreases the length of the trails, and '=' increases the length of the trails.

Gravity

        Keys: G(Down), H(Up), J(Left), K(Right)

        Info: The "Shift" feature allows the user to shift all particles in a certain direction, as dictated by the key pressed. The particles cannot be shifted in a direction twice. The shift is On/Off, so pressing a shift key twice will shift the particles in a direction, and then shift them back to the center.

Rainbow

        Key: /

        Info: The "Rainbow" feature is a fun feature that has been in since the beginning. This feature allows for the particles to take on colors of the rainbow instead of their original pixel colors. This is another On/Off feature, so pressing '/' once will turn it on, and pressing '/' a second time will disable it.

VII. Recording and Exporting

Recording is currently only supported through the TouchOSC app. To start recording, press the red rectangular button on the TouchOSC controller. The recording will continue until the red rectangular button is pressed again. The application will automatically proceed to exporting the video in .AVI format. The video file will be named "ScreenRecording (timestamp)" and can be found in the Movies folder for the current user.