A brief overview of each interface used in the study.

The interface we are using is similar to the paper prototype we showed the class. There are two differences between the one we showed in class and the one we are testing. The first difference is that once the user loads an image and presses the ‘Go!’ button, the ‘Open Image’ button turns into a ‘Cancel Painting’ button to allow the user a clear way to cancel painting once it has been started. The other difference is that the user no longer needs to go into ‘Properties’ in order to switch between painting with the software (“Automatic”) and painting with the controller (“Manual”). The radio buttons used to switch between the two interfaces is located on the main window in the program.

The narrative for each task that you gave to others.

We are going to have each user perform two tasks, each having two different ways to perform that task. The first task will be to load an image using the ‘Open Image’ button, and then loading an image using drag and drop into the program. The second task will be painting an image using both the software interface, and the hardware interface. The first way is to create a smiley face in Adobe Illustrator, load it into the program, and hit the ‘Go!’ button to start the painting process. The second way is to use the software interface to switch over to use the controller to plot the image. Since we do not have the robot fully implemented, we will have to use some approximations in how long it will take the user to paint the smiley face. We are also going to let the users “hit our system cold” without teaching them anything about the program, since this is the way most of our users will be using the interface anyway. We want the interface to be as usable as possible without wasting time explaining what everything does in the interface. We believe that everything we require the user to do should be common sense, and adding anything that isn’t necessary will just water down the user’s experience.

The script you read from at the beginning of the study.

We are working on a robot and a software interface to work with this robot, to allow people to spray paint, or ‘graffiti’, almost anything the human mind can imagine. There are two ways to interface with the robot. The first is to load an image into the robot software, which will do all the work and paint an image for you. The second way is to pick up a controller and control the robot manually. We will require you to perform two tasks, using two different ways to perform each task. We will now hand you a piece of paper with instructions on it. You may complete the steps in any order you like, but we recommend you complete the tasks in order.

The following is what we gave the user:

1) Load an image into the program
   a) Use a button on the interface to load the smiley face image (Desktop) into the program.
   b) Drag and drop the smiley face image from the desktop to the software.

2) Paint an image
   a) Paint an image using the software interface
      i) Open Adobe Illustrator and draw a smiley face. Save it on the desktop.
      ii) Use the software to draw the image.
   b) Paint a smiley face using the controller

Questionnaire forms.

We simply had the users rank their ‘Satisfaction level’ as 0%, 25%, 50%, 75%, or 100% for each method.
Description of the metrics used and an explanation of why they were selected.

We measured user satisfaction with each interface and time elapsed for each user to complete the given task with each interface. We selected these because they are the only helpful measures available given the unfinished state of our hardware implementation.

A summary of the raw data collected (spreadsheets, interaction videos, etc)

<table>
<thead>
<tr>
<th></th>
<th>Automatic</th>
<th></th>
<th>Manual</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Satisfaction (%)</td>
<td>Time (MM:SS)</td>
<td>Satisfaction (%)</td>
</tr>
<tr>
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<tr>
<td>User3</td>
<td>100% (5/5)</td>
<td>03:23</td>
<td>User3</td>
</tr>
</tbody>
</table>

Visual summaries of the data used to make sense of the results.

Our data is already extremely simple and easy to understand. The speeds were all fairly similar, which shows that the interface is easy to use. All three users had 100% (or 5/5) satisfaction from using the Automatic interface, but two users ranked the Manual interface at 75% (or 4/5).

Interpretation of the results.

The results for the Automatic interface were as we expected. We have a very little amount of information shown on the main window of our program, and the amount of information we do include is all that is necessary to actually operate the robot. No instructions are really necessary, granted the user looks at the program from the top down. The top of the window contains information that the user needs to input first, and the bottom contains things the user should input last. This top down method is very simple since that is the way we usually look at things anyway. The Manual interface received a slightly lower satisfaction rating, probably because it is difficult to draw a nice looking image (especially with round curves) using the simple (up-down-left-right) controller.

Recommendations on how to improve the interfaces.

Since we ran into most of our usability issues with our first paper prototype, we were able to fix the main issues with our interface in the second prototype. The tests we administered proved to us that our interface is simple, and we don’t need to teach the user how to actually paint something using the interface, whether it is hardware or software. Even though we are very welcome to changing our interface to make the user’s experience better, we were very happy to find that our interface is very simple and concise. More time with the interface may lead to small improvements in the design, but these will most likely be very simple things that we can address when we get to them.