

Report on *cherish*

Difficulties with positioning pictures and camera views:

Positioning pictures and camera views is one of the most important aspects of using the *cherish* program. However, successfully positioning pictures/camera views depends greatly on two factors: the setting of the scene (indoor vs. outdoor) and the orientation of the surface being traced in the picture (in line with the image vs. diagonal to the image). Both of these factors greatly affected the success of position pictures within the Strawberry Hill dataset. Perhaps some of these difficulties can be attributed to the fact that the images in this dataset were paintings rather than photographs, and thus often lacked realistic portrayals of perspective.

Setting of the scene (Indoor vs. outdoor):

With the Strawberry Hill dataset, positioning pictures and cameras views differed greatly between indoor and outdoor images. In general, it was easier to position the pictures with the indoor views. This is largely due to the fact that the indoor images were so greatly warped in their perspective that the only walls that could actually be traced were the walls parallel to the image (usually only the back wall). For example, as shown in Figure 1 below, the side walls and floor are so warped that it would be extremely difficult to use the image to trace any wall besides the back wall. Thus, when positioning indoor images, one simply had to position the image and camera view so that the back wall in the image lines up with the back wall canvas in the scene. In addition, the walls in these images were almost always flat.



Figure 1: an indoor image that showcases the perspective warp of the artists



Figure 2: an outdoor image showing a wall made of many uneven surface

Outdoor images were usually more difficult to position for a variety of reasons. One major reason was that the outdoor images would often contain depictions of walls that were not flat, as shown above in Figure 2. Thus, one would have to make the choice as to whether to approximate the wall as flat by using only one canvas, or choosing the more tedious approach of creating a canvas for each outdoor facet.

Furthermore, in this dataset, there were many outdoor images that fit together to create the exterior of the building in contrast with the indoor images in which there was only one image per room. Thus, in order to create the outdoor scene, one must trace different walls of the buildings from different images. Because the images in this dataset were paintings (which may often be inaccurate representations of reality) rather than photographs, the exterior building as depicted in the images may vary from image to image, and thus the traced walls may not fit together as desired. For instance, the heights of the walls may differ between images, requiring the user to manually adjust the height of the walls in each canvas to match.

Finally, the ease of positioning outdoor images was greatly affected by the orientation of the surface being traced in the picture, which will be discussed next.

Orientation of the surface being traced in the picture (in line with the image vs. diagonal to the image):

The most challenging types of images to use in both the indoor or outdoor settings were images in which the surface that one desired to trace consisted of lines that were diagonal to the image. For example, Figures 3 and 4 below give examples of images that contain surfaces that were diagonal to the image:



Figure 3: an outdoor image with diagonal surfaces. Note that the long wall of the building is diagonal to image



Figure 4: an indoor image with diagonal surfaces. Note that all the walls in the image are diagonal to the image

In general, it was very difficult to correctly position the images and cameras views for images that contained surfaces that were diagonal to the image. Even with the outdoor images for which the camera positions were known, it was difficult to position the image and camera view

properly for tracing purposes. For instance, in Figure 3, there is a diagonal line that defines the top edge of the long wall in Figure 3. In the scene, the top edge of this wall should be a straight, horizontal line. Nevertheless, it is very difficult to place the image and camera view correctly such that tracing the diagonal surface would result in the correct tracing of a horizontal line on a canvas.

Difficulties with working with a large scene:

In general, working with a large scene does not differ from working with a smaller scene. Nonetheless, the main difficulty with working with a large scene is interacting with the many canvasses. Currently, the user interface for working with canvasses is not very robust. While it is quite straightforward to sort through a small number of canvasses, once there are many canvasses, it can become difficult to find the canvas that one wants to work with. Furthermore, when there are many canvasses, it can be tedious to hide/unhide the canvasses that one is working with. This problem is especially exacerbated as there is currently no way to reorder or organize canvasses. Otherwise, working with a large scene is the same as working with a smaller scene.

Drawbacks/suggestions for improvements:

There are several drawbacks/suggestions for this program. First of all, it is noticeable that the system as a whole is quite robust, and is able to create almost any scene. Besides the noticeable fact that the system cannot create any kind of cylinder or round 3D object, almost any other kind of building can be created. However, while the system is very capable, the main improvements that will be discussed are ways to better improve the user experience.

One area where there could be improvement is with the “2D selection tool”. Right now, the “2D selection tool” is quite approximate in what objects it selects. As with the “Deleter” tool, the approximate nature of these tools make it quite hard to actually select/delete what one is trying to delete. Furthermore, it could be an interesting improvement if a way to move the selected objects with the arrow keys was implemented. Right now, it is quite difficult to move selected objects small distances.

Another area of improvement could be better interaction with groups of canvases. For example, some way to copy and paste groups of canvasses could be very helpful. Right now, one must clone a single canvas at a time; and even when one copies a canvas this way, it is often that the strokes on that canvas are not in line with the scene, and those strokes have to be manually moved as well.

Finally, as mentioned earlier, improved interaction with canvasses would be helpful. In addition to folders that could organize canvasses, a tool that hid all other canvasses would also be quite helpful when one is just working on a single canvas.