Watercolor-like image rendering is a problem historically known for its complexity due to the high detail required to model its natural media. However, past work has found numerous ways around this problem, creating tools for artists and computer scientists to generate watercolor images with relative ease. In this project, I intend to implement a watercolor-like shader over impressionistic scenes influenced by Japanese artists such as Chiura Obata. The first step in this project is to write and test this shader.

Once the filter has been created, I aim to create 2D images that mimic the impressionistic structure of Obata's paintings. While I am currently in the process of determining exactly what method will be used, I expect to have some layer-based feature creation procedure used to create images in a style perhaps like shown in the artist's rendition in Figure 1. For example, this could be done with an evolutionary algorithm, or some fractal-based method.
Features will also be given "base" colors according to this procedure, which, when applying the shader, will hopefully look good and fit the desired aesthetic. Base colors, if need be, could be selected by a feature-associated color palette and then flatly applied to features in the image scene, resulting in something similar to Figure 2. This image, passed through the shader, should reproduce "painting"-like images in the desired style.

From here, application of Richard Chang’s brushstroke analysis and 3D rendering may allow the program to visualize (if only partially) these scenes in 3D. While Chang's algorithm may need to be adapted, it will be at this point that I can experiment with its capabilities. For example, time permitting, I would like to implement some sort of player mechanics to allow for some terrain-based gameplay. This could involve moving between aspects and dimensions or otherwise exploring the scene in some limited but unique way. These would depend on how flexible I can be with calculation in runtime but mostly would modify terrain features.
Timeline

February 17:
- Basic filter completed and tested over 2D images consisting of only flat colors
- Finished research for procedural generation

February 21:
- Filter fully completed

March 14:
- Initial system for generating 2D images completed
- First outline of thesis based on initial progress

March 21:
- 2D image generation successfully combined with filter, or alternate plan decided
- Abstract rough draft

April 14:
- Addition of Chang’s brushstroke analysis
- Draft of thesis complete

April 21:
- These 2\textsuperscript{nd} draft complete
- Brushstroke analysis complete

Rest of time:
- Touch-up work and extra details, debugging, finalizing paper and website