FDA Internship Tasks:

This summer, I automated WSI viewer comparisons for benchmark testing of color performance. At first this was done with only AHK interacting with the viewers and MATLAB processing the images; then, using ActiveX, MATLAB interacted with the viewers, calling AHK as needed.

The first version was presented in a poster for the FDA Summer Poster day. The experiment showed that color is not consistent between viewers, and could be measured and tested for in an objective way.

Later observations showed that some viewers, such as Sedeen, produce stitching errors when opening WSI files. This needs further investigation to determine the cause. I was unable to write a specialized registration function to demonstrate the stitching errors easily, but the stitching errors can be readily seen when the ROI is focused on the stitch. These stitching errors are unrelated to the WSI scanner, since the stitches are inconsistent across viewers while viewing the same WSI file.

Finally, with the implementing of “gen2”, I allowed for adjustment of the FOV of the viewers before screenshots were taken. This makes the procedure semi-automatic instead of automatic, but the process generally works the same as before. The only additional step is the user performing panning and zooming to match the FOV of each viewer with an overlaid target image before continuing execution with an additional hotkey.

There are still some robustness issues with the script, as it assumes several things about each viewer upon startup, such as all the slide maps and zoom bars being closed. This means that setup before running the script is very important. However, there should not be any issue running the script in batch, with the appropriate modifications. I also did not get to determine the causes of the color differences between viewers, so more work definitely needs to be done in that direction.