Overall goal of this software:

This post-processor is a tool for users to make SEM images more understandable by emphasizing the most salient parts of them (e.g. to make clearer visual aids for a blog post or a presentation)

Requirements:

The program must take a single folder of SEM images as input (called a "session")

The program must be able to apply its image alterations without compromising the quality of the image.

Images will be large - around 4000 x 3000 with 16 bits per pixel.

The program must be able to perform basic image manipulation tasks, specifically:

* Manipulating contrast
* Manipulating brightness
* Crop the image
* Rotate the image in 90 degree increments

The program must be able to store metadata and annotations associated with the image

These annotations are notes about the image written by users (a little bit like the powerpoint notes section)

Users must be able to edit those metadata and annotations

The program must store a table of which users have edited an image and what they edited.

The program must be able to highlight certain elements of the image using shapes

Similar to drawing a circle around something in MSPaint. This part of the software doesn't need to have super precise or extensive controls.

The program must be able to apply false-color to SEM images.

The program must be able to combine two images and color them differently.

E.g. taking two similar images of the same object from a slightly different perspective, then color one blue and one red for a 3D effect.

The program must be able to publish images to the EPS SEM website

The publishing function must allow for selective publishing of metadata.

The published metadata must be visible in some kind of menu or details window - not necessarily on the image itself, but accessible from the same place on the website with the published image.

Likely users:

The core user demographic is a non-technical eleventh grader who is interested in biology or medicine who wants to learn about electron microscopy.

Mr. Mein, Mr. Waltzer, and Mr. Wassink will use it.

Use cases:

The users will mostly want to do a couple simple alterations to an image to make parts of it easier to understand and parse by a non-SEM familiar audience. Raw SEM data is often unclear and hard to understand.

As such, the easiest/most common alterations should be easy to do.

E.g. the windows photo viewer, which has a few simple and common functions that are readily accessible and don't require a tutorial.

The program should do a few things have all them easy to find and do (think about our core user demographic).