

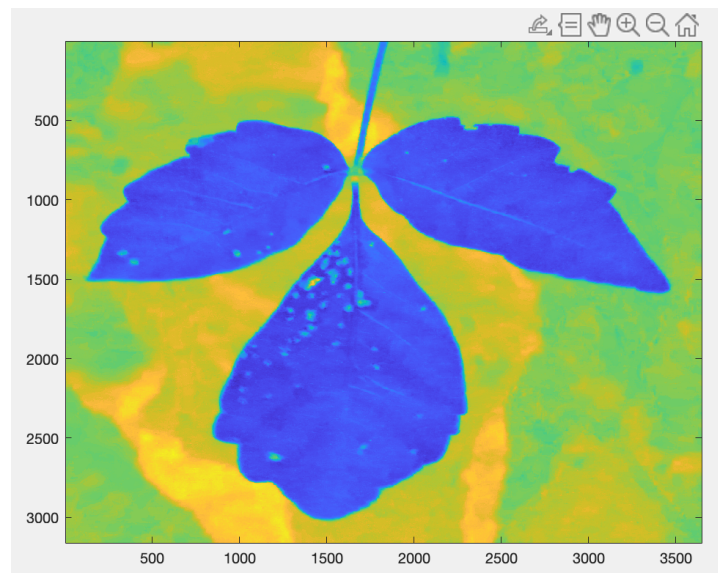
CSCI - 631 POISON IVY CHECKPOINT 03

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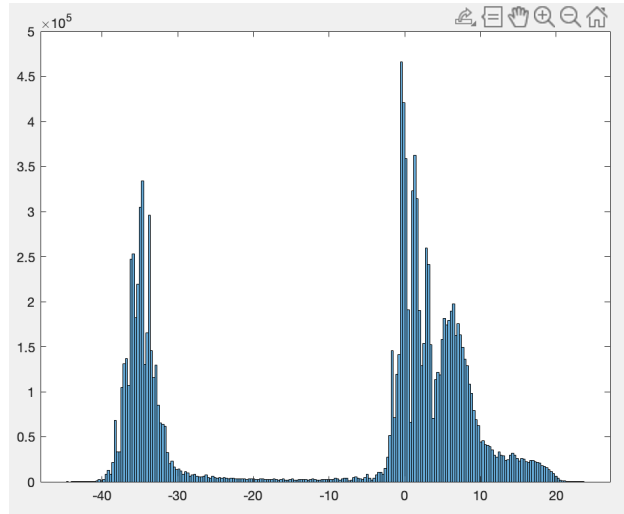
Until the last checkpoint, we tried to smoothen the images using Gaussian filters. But, we were unable to remove the background noises that included small leaves, grass, or other ground particles. We were trying to explore more with the rgb image. Now, we decided to proceed with different color spaces and their values to get more accurate results.

To start with the noise removal process, we wanted to minimize as much noise as we can before processing the image. This can be done by resizing the image i.e. cropping. Since, we know the person who is capturing the picture wants to keep the subject in the center (focus) of the frame, we are certain that the poison ivy we want to identify will always be at the center of the input image. So, cropping this image will help us get rid of some background noise.

This time, our strategy was to first convert the image into L*a*b* color space. Then, we extracted the a* channel because our poison ivy is green! This helped us get an isolated image of the leaves which can be seen from the following image:



With the help of histogram analysis, we identified that the leaves that were present in the center of the image were lying in the range of -2 to +0.5 a* values. The exploratory data analysis of the a* channel gave us the histogram plot :



In the above histogram, we can see that the most common pixel values are of the foreground leaves and background values which are towards the darker shades of red (brown). From this, the bin range for the leaves was identified as $[-2, 0.5]$. We separated those ranges of pixels from the whole image using a mask. This gave us an isolated image of the leaves which can be seen in the image below:

