CS 4650 - Image Processing

Homework 1A

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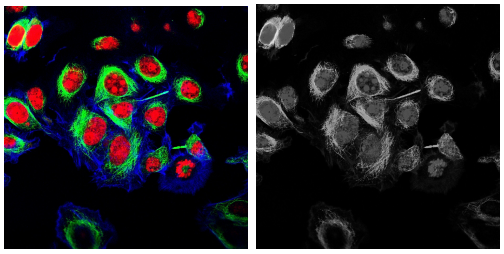
Abstract

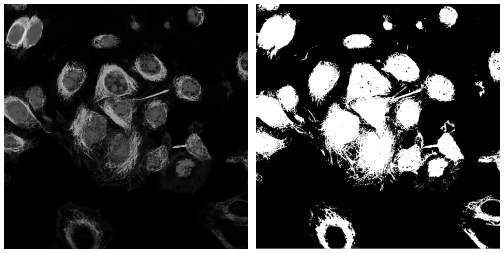
The main objective of this assignment has two distinct parts. The first goal is to take a fully colored image and convert it to grayscale. The second goal is to take a grayscale image and convert it to a binarized image based on a user-provided threshold value. Both of these goals were met and provided intriguing results.

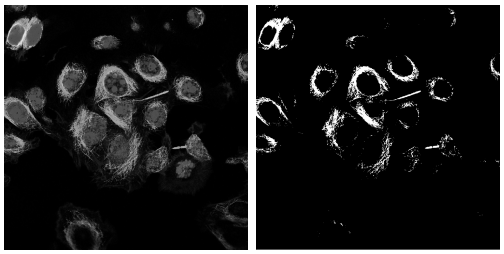
Introduction

The experiments, as described above, revolved around altering the color content of input images. The first experiment served to convert an RGB image to grayscale, and the second served to convert a grayscale image to a binarized image utilizing a given threshold value. The goal of this project was to gain experience with OpenCV libraries and gain knowledge about the image altering process, and to apply techniques learned during lecture.

Experiments and Results


RGB Image -> Grayscale


Grayscale -> Binarized w/ Threshold = 20


Grayscale -> Binarized w/ Threshold = 120

Conclusions

The OpenCV libraries contain very useful methods of image manipulation, and can be utilized to alter images in order to extract specific information from said images. It will be fascinating to delve deeper into the codebase and conduct more thorough experiments on images using these libraries and pushing the limits of what they are capable of.

References

Lec2_Introduction_IP2.pdf

Lect3_IntensityTransformations.pdf

Canvas\Modules\ Image-Processing-Tutorial-0-Setting-Up-OpenCV-main

Canvas\Modules\ OpenCV-Cmake-example