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CS455 Assignment 4
Part B

Write-up

Purpose

In this assignment, we implement the DCT transform which maps the image spatial domain to the frequency domain.

Method and Results

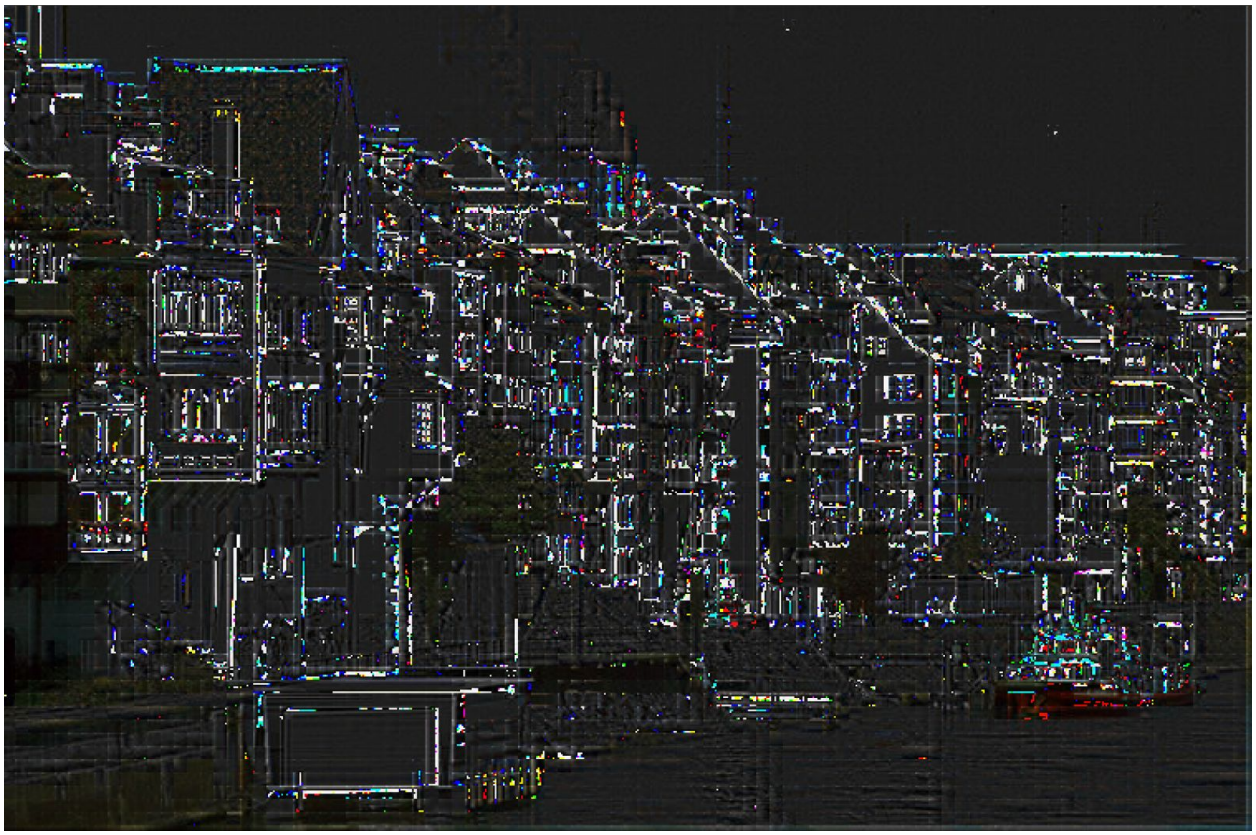
First we obtain this image and display it.

Next, we convert our image from RGB to HSI (Hue, Saturation, Intensity).

Next, we implement our DCT transform using the equation given in our lecture slides.

You can see in the result of applying our DCT, the 8x8 blocks that tessellate the result are visible.

Finally, we apply the Inverse DCT on our image. This is also given as an equation in the lecture slides.



Bug Report

Clearly, the DCT and IDCT algorithms aren't working perfectly. I have tried my best to find the bugs in the code, but I was more or less just coding according to the given equations. The general ideas and concepts behind the functions are correct however, as you can see in the IDCT image we maintain the important features of the image such as the edges and some colors as seen in the red boat.

I wasn't able to get the color based segmentation to work too well. I attempted to implement and use the Hough transform, but unfortunately I wasn't able to get concrete results.