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Course: ITAI 1378
Date: September 6th, 2025

Reflection Journal

What was the most surprising discovery about how images are represented?

I never really realized that the RGB channels were made to make processing the image easier by splitting up into three separate images that were easier to process, I know about that process in NES games using bitplanes, but I didn't know that the image processing method utilized in this lab used was a similar method.

How do the mathematical operations we implemented relate to visual effects?

Since the RGB values can be interpreted as numbers, the pixel neighbors as matrices, and the translation, rotation, and shear as also matrices, they can be changed through mathematic operations. And since those values play a big part in the look of an image, by proxy, mathematical operations play a big role in the look of an image as well.

Which technique was most challenging to understand and why?

The techniques that use matrices are the more difficult techniques to understand, particularly the geometric transformations.

How do today's lab activities connect to the Nano Banana demonstration from class?

Image editing AI tools, like Nano Banana, utilize those operations that we implemented, like blur, edge detection, sharpening, change in the brightness, change in the contrast, etc.

What real-world applications can you envision for the techniques you learned?

These techniques have already been utilized in image editing software, game engines, art software, 3D creation and processing software, etc. In addition, others, like edge detection, while aren't utilized in engines, have been used in games for stylistic purposes. They have also been used as Instagram filters (as shown above), or really, any filter from any video creating software.

How might you combine traditional and AI approaches in a future project?

Honestly I don't truly know, maybe the traditional techniques can be used to iron out any imperfections that an AI-processed image may have, maybe the dataset the AI might have can be modified using new images made from traditional, more efficient, man-made techniques, there are ways both could be integrated, but I'm not sure what would be the best method.

What aspect of image processing interests you most for further exploration?

It would be nice if I could see more operations that can create more interesting visual effects or expand the possibilities that already existing operations can achieve in creating new visual effects and maybe look into 3D visualization methods like rasterization.

How has this lab changed your understanding of digital photography and image editing?

It has provided me a wider perspective and a greater understanding on how images are processed and displayed, and how the methods in which images are altered work, especially topics like edge detection and 3D perspective

What questions do you still have about image processing?

I don’t really have any questions now for image processing right now.