

Homework Writeup

Instructions

- This write-up is intended to be ‘light’; its function is to help us grade your work and not to be an exhaustive report.
- Be brief and precise.
- Please describe any non-standard or interesting decisions you made in writing your algorithm.
- Show your results and discuss any interesting findings.
- List any extra credit implementation and its results.
- Feel free to include code snippets, images, and equations. Below are useful markup templates for these.
- **Please make this document anonymous.**

Declaration of Generative AI Use

Reminder of Course Policy

- The use of GenAI tools (e.g., ChatGPT, Grammarly, Bard) for completing any part of this course is discouraged.
- Using these tools is not needed to be successful in the class and could be detrimental to your learning experience.
- If you use them, you must cite the tool you used and explain how you used it.
- If you do not cite the tool, it is an academic code violation.
- We will be using special tools to detect cases of unattributed GenAI use.

Student Declaration

Have you used generative AI tools to complete this assignment:

YES NO

If you answered YES above, describe what tools you used and what parts of the assignment you used them for below:

Example: I used ChatGPT to debug my convolution implementation

Assignment Overview

The assignment was to program an image filter that takes in an image and a kernel and produces a modified final image, in our case a hybrid image that merged two images into a final image that combined the low frequencies of one and the high frequencies of the other.

Implementation Detail

I created a convolution function that takes in an image and runs convolution on all of its channels (works the same for RGB and BW). It then stacks the channels back up into the shape of the original image. It pads the images using zeroes. Numpy.multiply and numpy.sum was used to get the new value for each pixel.

Hybrid image uses this convolution function to create a low pass image and a high pass image and then adds them together. Nothing too interesting happened there.

Result

1. Behold my beasts...

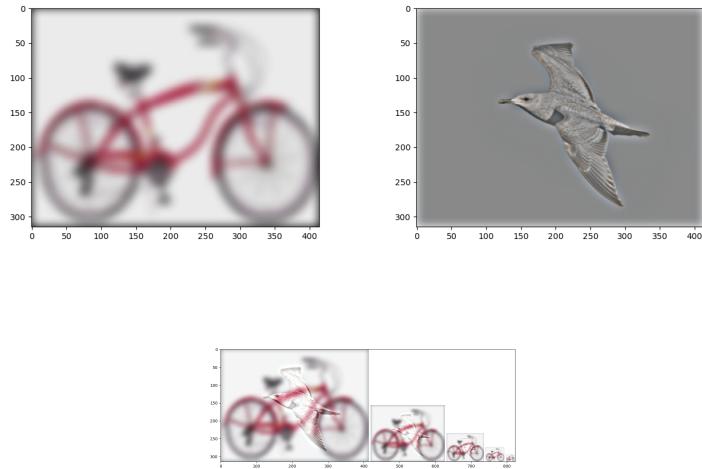


Figure 1: Combination of a bike and a bird.

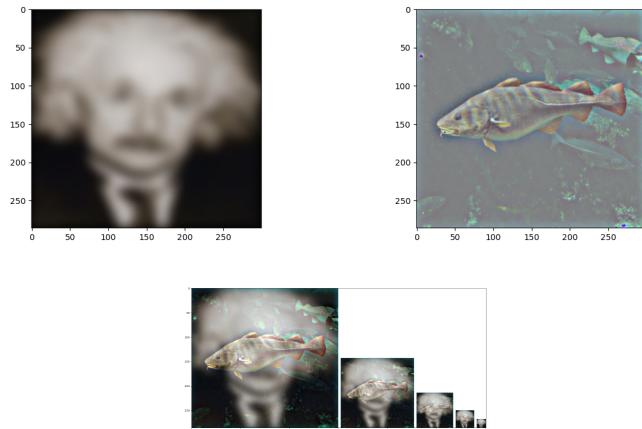


Figure 2: Combination of Einstein and a fish.

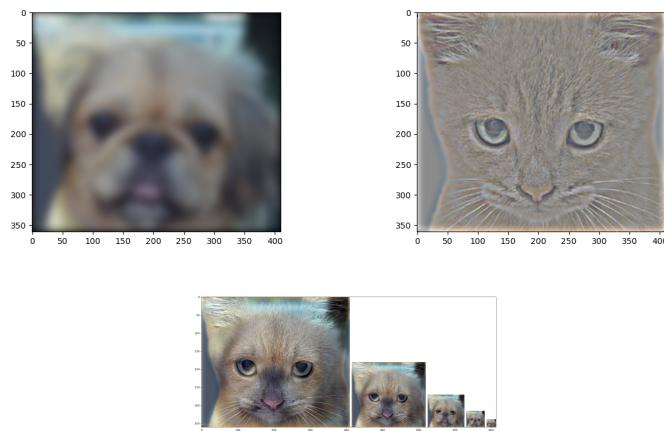


Figure 3: Combination of a dog and a cat.

Extra Credit (Optional)

1. I formed a hybrid from two images not in the code database: You Know I Had To Do It To Em, and a face from Detective Pikachu.

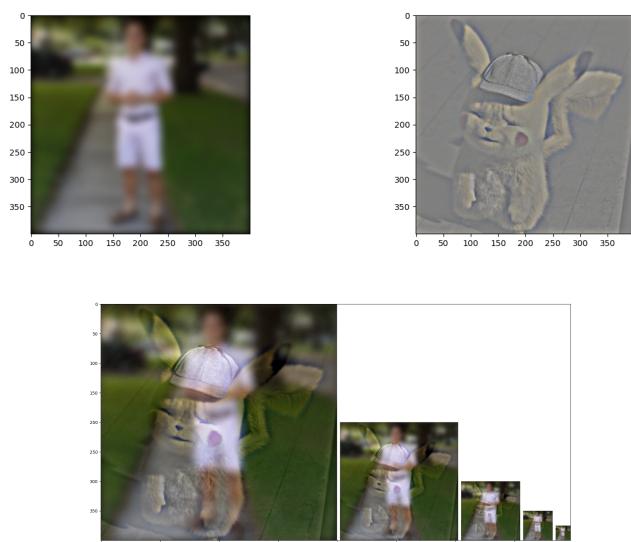


Figure 4: The aforementioned beast.