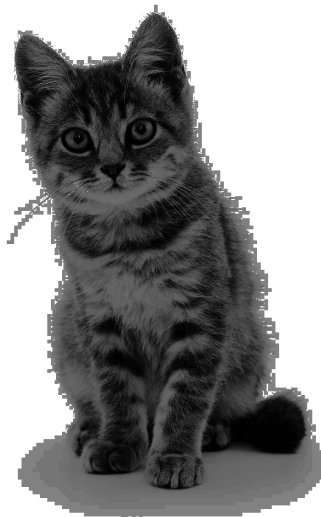


Project1 Hybrid Images

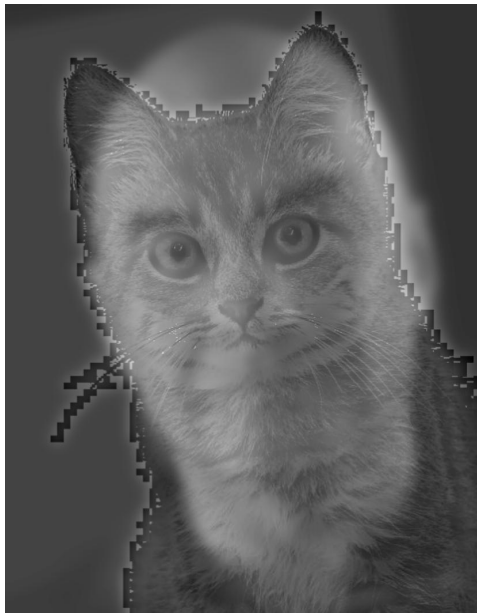
Yuchen Li 674261852

1. Hybrid image main result

Two images: cat1.jpeg, man2.jpeg



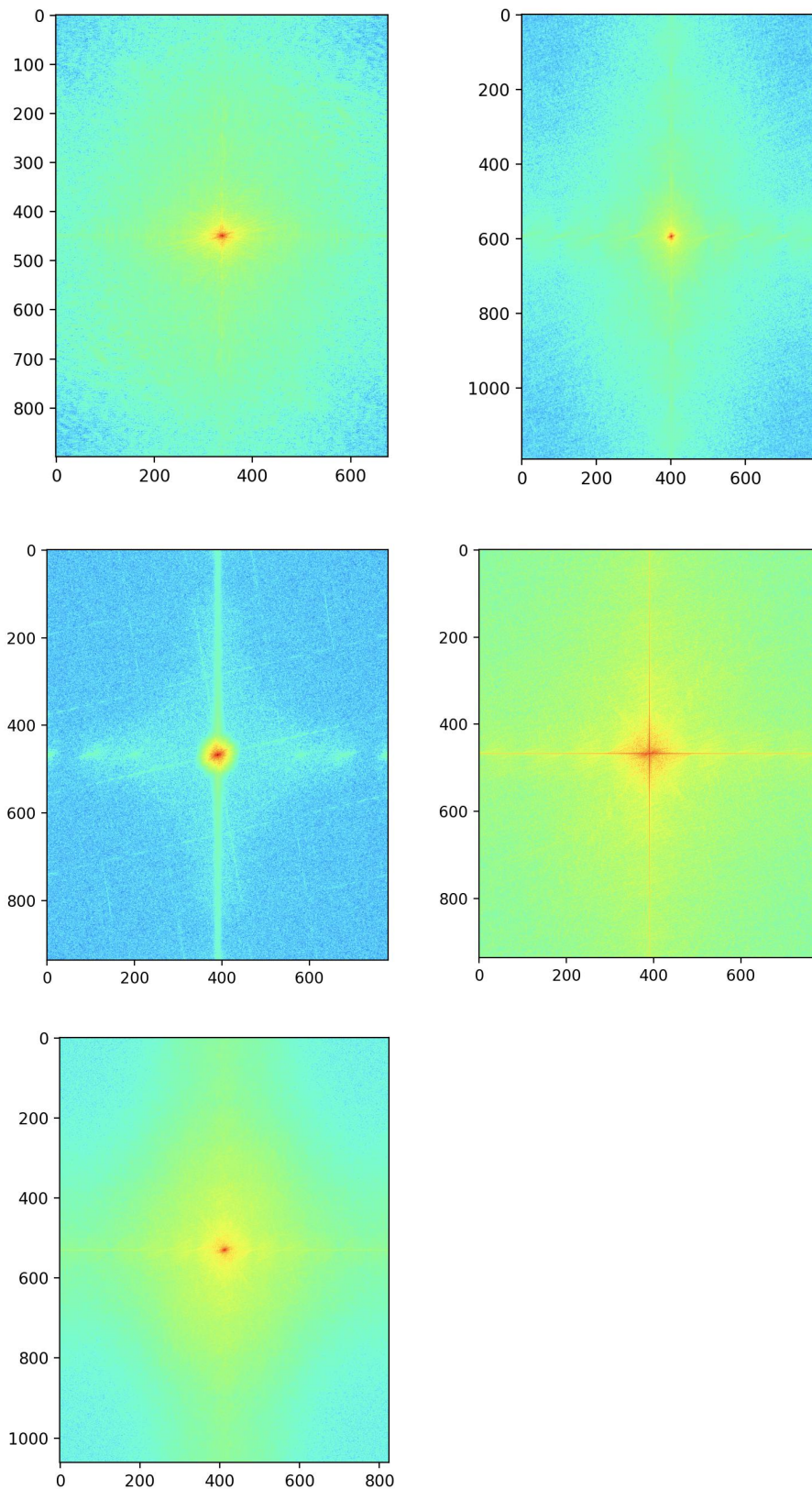
Filtered images: im1_filtered.jpg, im2_filtered.jpg



Hybrid image result: hybrid_result.png

FFT images:

FFT_im1.png, FFT_im2.png, FFT_im1_filtered.png, FFT_im2_filtered.png, FFT_hybrid.png



I noticed that the cat picture was a little too bright, so I did a histogram equalization for it: cathist.jpg

By combining the low-pass filtered image with the high-pass filtered image, a hybrid image can be created. FFT images shows that the low-pass filter partly removes the high

frequencies and the high-pass filter partly removes the low frequencies.

2. Hybrid image additional results

Result1:

Different facial expressions



Input:



Result2:

Original character and moe character



Input:



3. Image enhancement tasks (2 required, 3 for B&W)

(1) Contrast Enhancement

Original image:



Result:



Histogram equalization of RGB three channels can be used to obtain the image with enhanced contrast. A similar effect can be achieved with gamma correction, but gamma corrected images can seem too bright or too dark.

(2)Color Enhancement

Original:



Result:



The image is transformed into HSV channel form, and gamma correction is applied on the V channel.

(3)Color shift

Original:



Result:





I used the LAB color space. The picture is converted to LAB channel and gamma correction is made to channel A or channel B.

**4. Color hybrid result (B&W)
Colored high-pass:**



Colored low-pass:



Colored both:

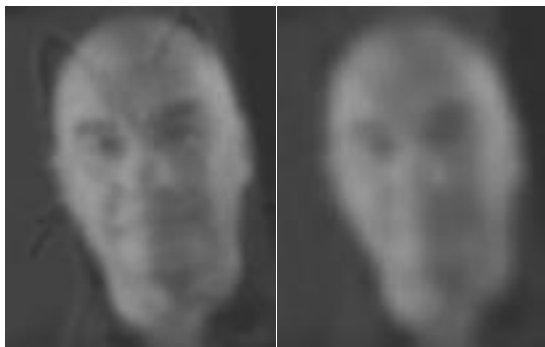


I converted the original image into a gray-scale image and then read it in as BGR and made the hybrid images.

I found that it didn't make much sense to keep the color on the high-pass filtered image, because the filtered result was similar to the grayscale result. So I think the latter two images are roughly the same.

5. Gaussian and Laplacian Pyramids (B&W)

G0-G5:



L0-L4:

