

**Name (netid):** Ruisen Tu (ruisen2)  
**CS 445 - Project 1: Hybrid Images**

Complete the claimed points and sections below.

**Total Points Claimed**

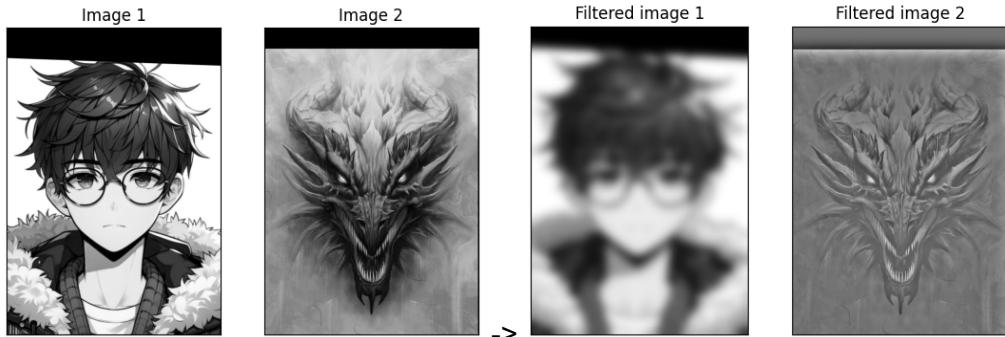
[ ] / 130

1. Hybrid image main result
  - a. Main result and description [ ] / 45
  - b. FFT images of main result [ ] / 15
2. Hybrid images: two additional results [ ] / 10
3. Image enhancement tasks (3rd is B&W)
  - a. Contrast enhancement [ ] / 10
  - b. Color enhancement [ ] / 10
  - c. Color shift [ ] / 10
4. Quality of results / report [ ] / 10
5. Color Hybrid Image w/ explanation (B&W) [ ] / 5
6. Gaussian / Laplacian Pyramids (B&W) [ ] / 15

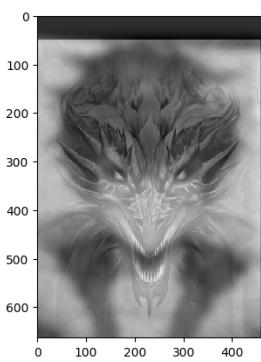
### 1. Hybrid image main result

Include

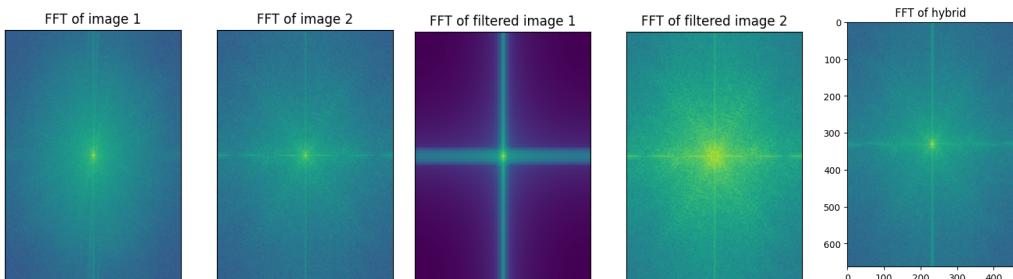
- Original and filtered input images



- Hybrid image result



- FFT images of each original and filtered image and the hybrid image

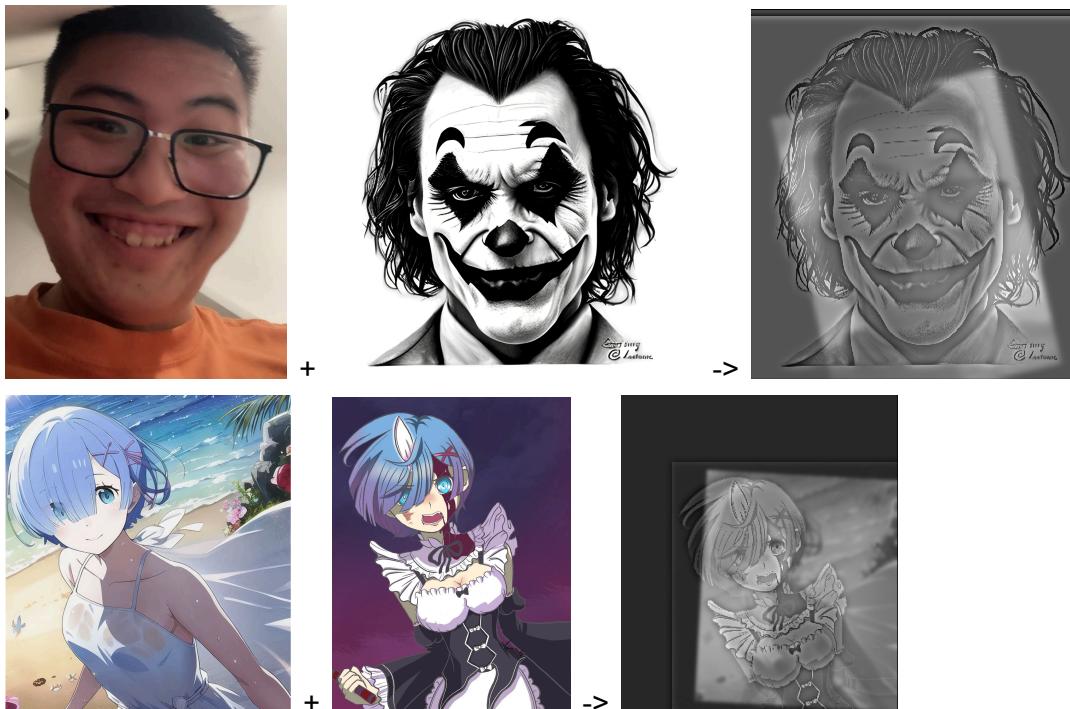


- Description in a few sentences of how it works using the included images as illustrations. Explain parameter settings and any clever ideas that are incorporated.
- All results must be based on your own images (can be from web with attribution, but not provided samples)

## 2. Hybrid image additional results

Include

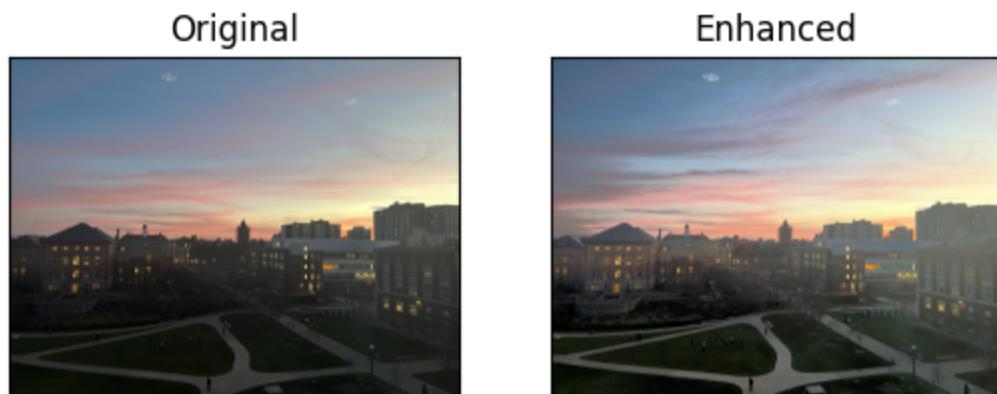
- At least two additional results (may not use provided samples). For each, include the input and hybrid image (do not need to show filtered or FFT images)



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

Include

- For at least two out of three enhancement tasks (each is worth 10 points), display original image, modified image, and explanation of how the image was modified
- **Contrast enhancement**



The original image is first converted into HSV color space. Then I performed histogram equalization only on the Value channel so the brightness is more evenly distributed. As shown in the image, the details of the buildings are more visible.

- **Color enhancement**



The original image is first converted into HSV color space. Then I add a value of 25 to the Saturation channel and cap the maximum value by 255. This makes the entire image look more vivid.

#### **4. Quality of results and report**

Nothing extra to include.

#### **5. Color hybrid result (B&W)**

Include

- Original images, hybrid image
- Explanation of method: Is it better to use color for the low-pass, the high-pass, or both?

#### **6. Gaussian and Laplacian Pyramids (B&W)**

Include

- Gaussian pyramid of main hybrid image result (can be one row of images)
- Laplacian pyramid of main hybrid image result (another row of images)

#### **Acknowledgments / Attribution**

List any sources for code or images from outside sources