

**Name (netid):** Molly Yang (tvy2)  
**CS 445 - Project 3: Gradient Domain Fusion**

Complete the claimed points and sections below.

**Total Points Claimed** **[120] / 160**

**Core**

- |                                |           |
|--------------------------------|-----------|
| 1. Toy Problem                 | [20] / 20 |
| 2. Poisson blending            | [50] / 50 |
| 3. Mixed gradients             | [20] / 20 |
| 4. Quality of results / report | [10] / 10 |

**B&W**

- |                                    |           |
|------------------------------------|-----------|
| 5. Color2Gray                      | [20] / 20 |
| 6. Laplacian Pyramid Blending      | [0] / 20  |
| 7. More gradient domain processing | [0] / 20  |

**1. Toy problem**

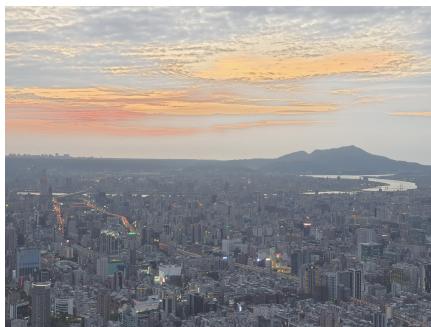
Include

- Max error is: 8.07367729038777e-06

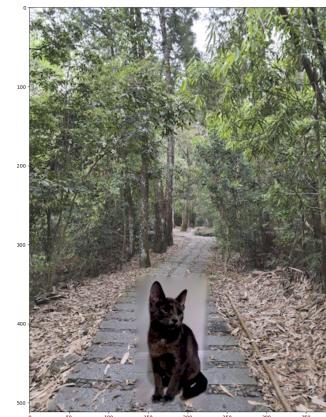
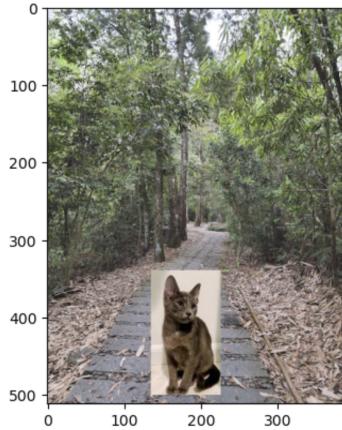
**2. Poisson blending**

Using your own images (not sample images), include:

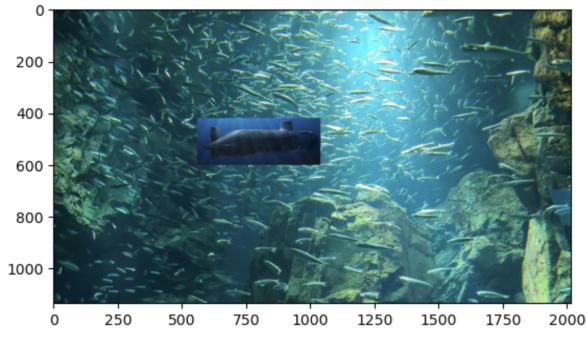
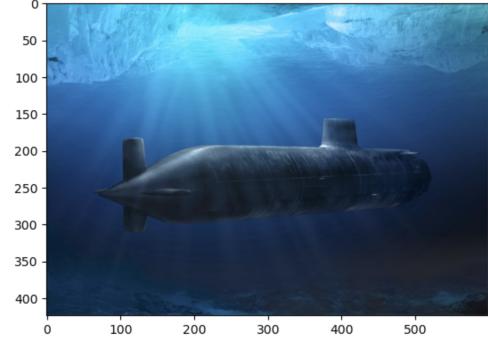
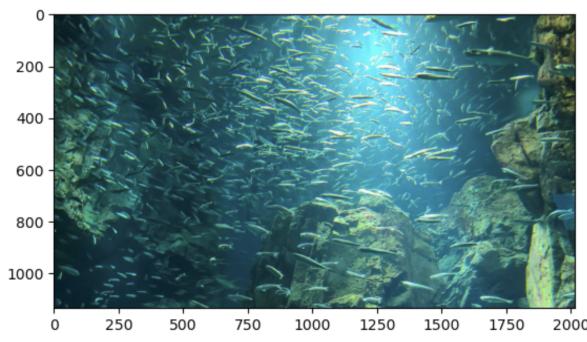
- Your favorite blending result, including: (1) background and object images; (2) pasted image with source pixels directly copied onto target background region (can use `utils.get_combined_img()`); (3) final blend result. (30 pts)



- At least one more good result (10 pts)



- At least one failure case, where the result is bad. Explain why it doesn't work. (10 pts)

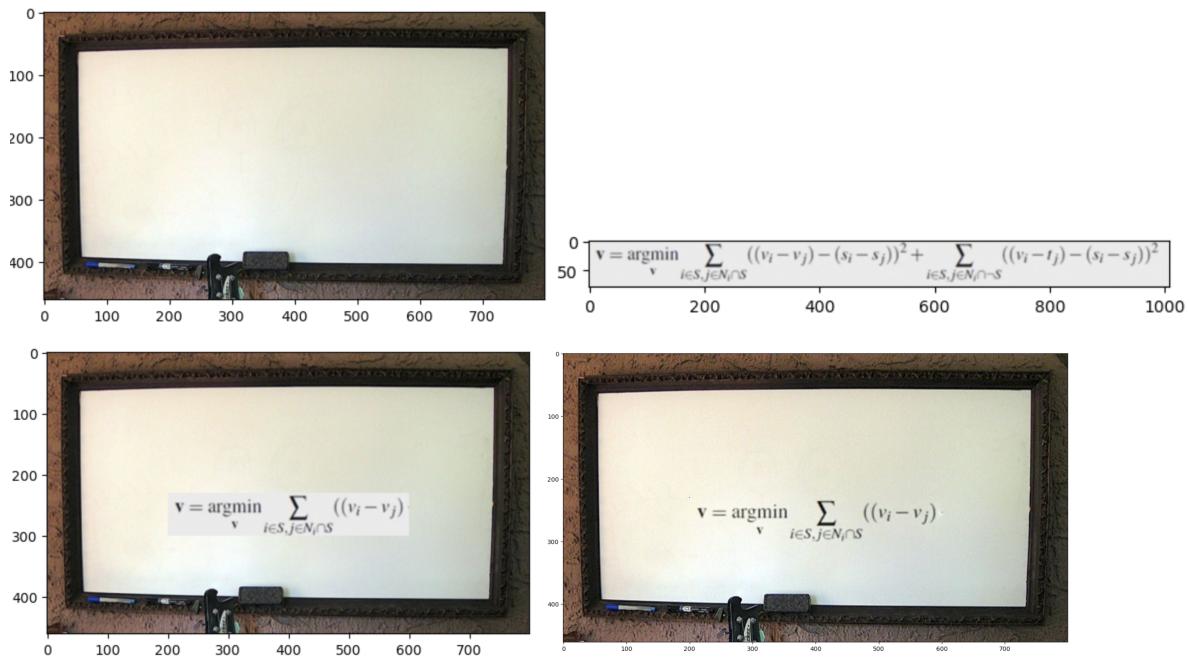


It did not work well because there are fish in the background that get cut off transitioning to the submarine image. The sunbeam in the submarine image also did not connect well to the texture in the fish background.

### 3. Mixed gradients

Using your own images (not sample images), include:

- At least one result with: (1) background and object images; (2) pasted image with source pixels directly copied onto target background region; (3) final blend result.



#### 4. Quality of results / report

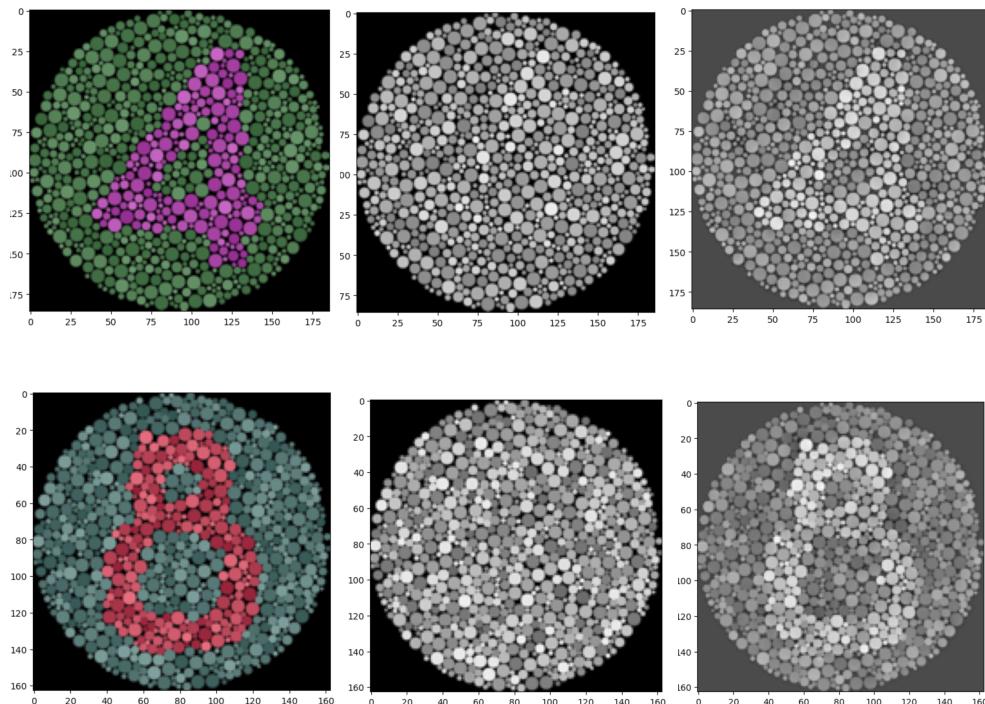
Nothing extra to include (scoring: 0=poor 5=average 10=great).

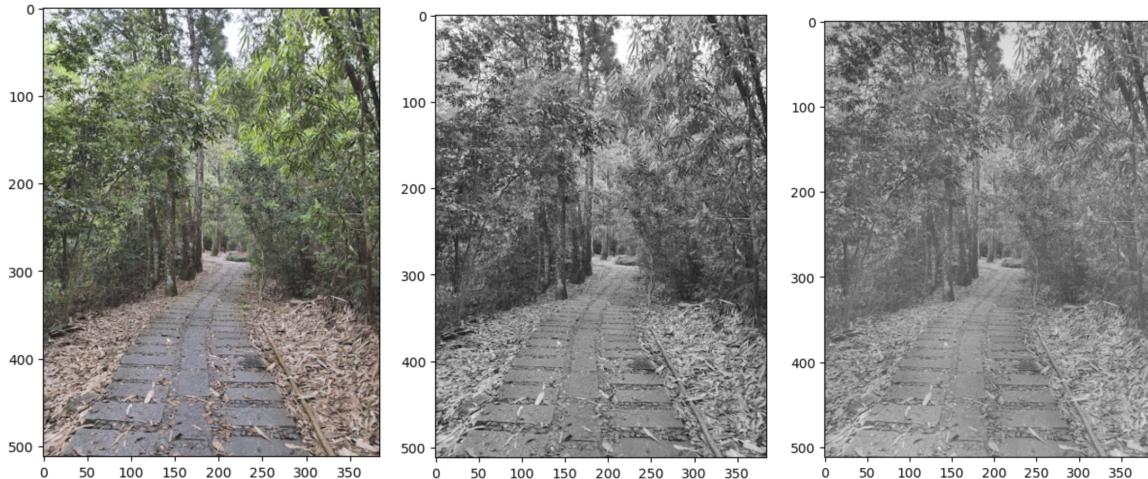
#### 5. Color2Gray (B&W)

Include

- Color and grayscale of colorBlind8.png and colorBlind4.png, where grayscale is created by your code
- Color and grayscale of one natural image, where grayscale is created by your code
- Explain your method/constraints

Original / grayscale from COLOR\_BGR2GRAY / grayscale from color2gray





A mask is created where the pixels are black. Similar to mixed gradients, the channels are separated and the channel who has the greatest magnitude is used with the intensity from the grayscale image.

## 6. Laplacian Pyramid Blending (B&W)

Include

- For at least one example, compare copy-paste, poisson, and laplacian pyramid blending. Include the object and background source images, and the blended results for each method. You can use different masks for different methods.

## 7. More gradient domain processing applications (B&W)

Include

- Show at least one example for each method that you implement. Explain the constraints used for each method. Something relatively complex like colorization is worth full points. Simpler applications like non-photorealistic rendering can also be worth full points if multiple variations are shown or clever methods used.

### Acknowledgments / Attribution

List any sources for code or images from outside sources

Project 3 tips

[https://docs.google.com/document/d/1XVq3X6-QEestTQ0OljZa\\_ANI-sI1\\_8zDKsKC6gC1Wc/edit](https://docs.google.com/document/d/1XVq3X6-QEestTQ0OljZa_ANI-sI1_8zDKsKC6gC1Wc/edit)

Project 3 description

[https://courses.engr.illinois.edu/cs445/fa2023/projects/gradient/ComputationalPhotography\\_ProjectGradient.html](https://courses.engr.illinois.edu/cs445/fa2023/projects/gradient/ComputationalPhotography_ProjectGradient.html)

Submarine

<https://travel.stackexchange.com/questions/2930/whats-the-deepest-underwater-tour-available>

Plane

<https://www.flickr.com/photos/jasonohalloran/456163166>

Whiteboard

<https://www.flickr.com/photos/starkos/2866208772/>