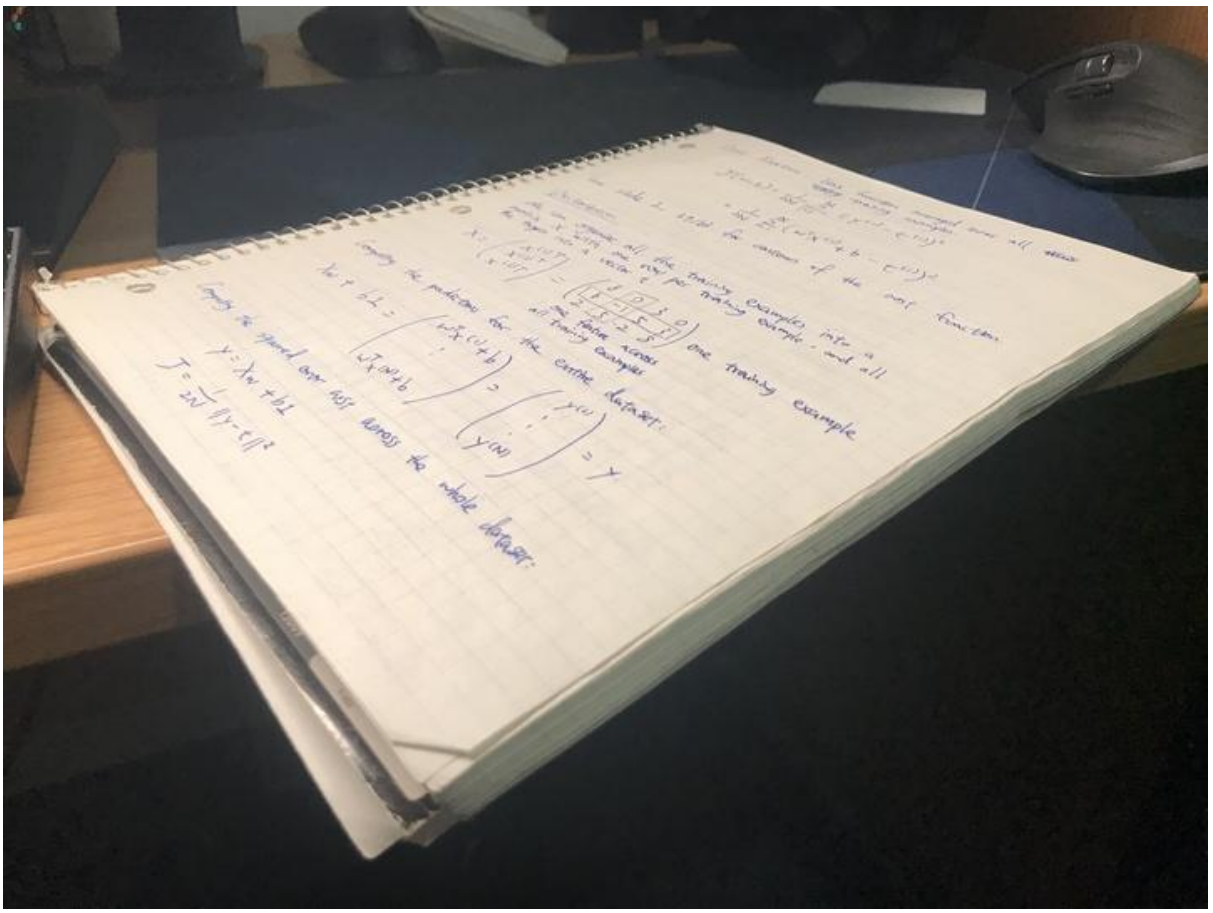
Assignment 1 Report

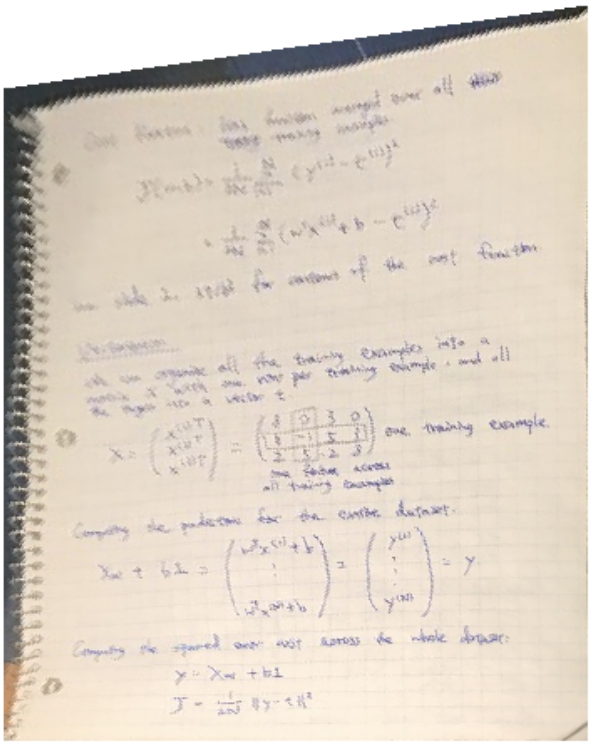
CSC320H1, Winter 2023
Ziyue Yang
Student Number: 1004804759
Username: yangzi33

Images of Input and Output

Input 1: Document of my notes on cost function (cost0.jpg)



Output of cost0.jpg



Input 2: MLH Sticker on my Laptop (mlh0.jpg)

Output of mlh0.jpg

Input 3: Different Angle of MLH Sticker (mlh1.jpg)

Output of mlh1.jpg

Input 4: Amazon Prime Package with Bubble Wrap Texture (prime0.jpg)

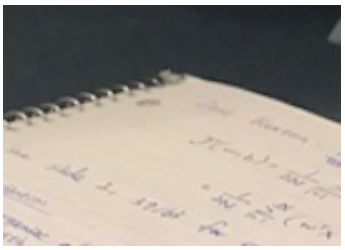
Output of prime0.jpg

Input: Amazon Prime Package from a Different Angle (prime1.jpg)

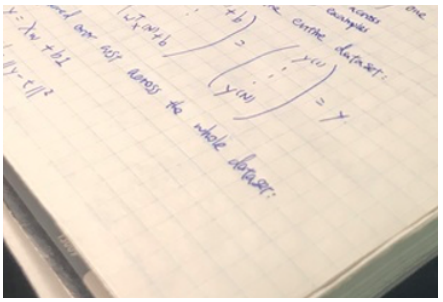
Output of prime1.jpg

Discussion

For cost.jpg, texts on the document are blurrier at top left corner. This is potentially caused by the angle. As shown in the following figures, our picture captured more details from the bottom right of the document than the top left (hence the blurry part of output image).



Top Left



Bottom Right

For the first image of MLH sticker (mlh0.jpg), the sticker can be seen very well since the angle of camera to the sticker is large (see Input 2 of previous section); however, the output of the second image of MLH sticker (mlh1.jpg) has a stretched “M” and “L”. Our homography matrix here potentially performed a larger stretch than in mlh0.jpg to fill out the destination pixels; this could also be due to the size of the image as we downsized it to 20% of the original image, hence it contains less pixels and the stretches may look rough (but faster backward warp).

For both images of an Amazon package with a bubble-wrap texture, the warping seems normal, so the bubble-wrap texture does not affect too much of the backward warp.

Improvements

One improvement we can do is to pick larger size images, and use vectorization to speed up the process, so that we get more details from the source image, and the output will be less rough as we have more pixels.