Team members:

- Chaeun Hong (hong.930), Yuting Yang (yang.5493)

Project Title (1 sentence):

- emoji mosaic effect on the selfie background

Provide a short description of the project (short paragraph):

- In the project, we will use edge detection, background subtraction, NCC, and superpixel algorithms. Through them, we will extract the background to do the mosaic. Then, we will do a mosaic with emojis based on their color similarity. The final result will be similar to the original image but the background is mosaiced with emoji.

Where you will get the data (1-2 sentences)?

- We will use our own data (taken in portrait mode on iPhone) to be mosaiced and we will use from https://getemoji.com/.

What will each team member code/develop (short paragraph, in detail, per person: what vision algorithms will you use/develop, how will apply them, what parts of the algorithms will be changed/explored, what will you test, etc.)?

- Chaeun: Using edge detection (such as Gaussian mask or Sobel mask), I will extract the object (e.g., person) first. Then, I will use background subtraction to get the backgrounds only. This background will be used for the mosaic. After the mosaic, I will combine the object and background. For the first part (edge detection), I will find the best mask and its sigma value. For the second part (background subtraction), I will find the best threshold and decide which background subtraction formula shows the best result.
- Yuting: Takes charge of applying the emoji mosaic effect. Method 1: use NCC to find the best match from emoji image lists for each patch (segmentation) in the background and replace the background with the corresponding emoji image. Method 2: using SLIC superpixel algorithm for image segmentation. Superpixels will be regularly shaped with a high value of compactness to fit in emoji images. Two methods will be compared to decide the approach taken by the final product.

How will each team member evaluate the work/results (short paragraph)?

- The evaluation will be divided into parts pertaining to background subtraction and the emoji mosaic effect. For the object & background subtraction, one of the evaluation criteria is “How small is the noise occupied on the overall image?”. In other words, the accuracy of the extraction is based on the area of noise. The evaluation of the effect of emoji mosaic will be based on whether the visual result is easily recognized or not. We will conduct the survey by pairing the original images with their results with the emoji mosaic effect among a group of people.