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LABORATORY REPORT 10:
CHROMA KEYING

In week number 10 of CMSC 165 Digital Image Processing exercise, Ma'am Dyanara Dela Rosa who is our laboratory instructor, informed us that we'll be doing the much awaited chroma keying exercise for the next two weeks and the exercise will be worth 30 points or 3 exercises. First of all, what is chroma keying? According to techopedia, "chroma keying is a technique used for combining two frames or images by replacing a color or a color range in one frame with that from the another frame.It is often used in film industry to replace a scene's background by using a blue or green screen as the initial background and placing the actor in the foreground. The principle behind chroma keying is that the color blue is the opposite color of skin tone, so a distinction between the two is very clear, making it easier to select the color without worrying about any part of the actor being included in the selection. The whole blue selection is then replaced with another frame as the background. Chroma key is also known as color keying and color separation overlay; it is also commonly called blue screen or green screen." In my own understanding, I understand chroma keying as replacing the chosen hue pixels in an image or video (for example, green) with the pixels of the background you want to replace the image or video with.

For the 30 points worth of exercise, Ma'am Dyanara Dela Rosa instructed us to form a group with five members to accomplish the exercise within three weeks. My group mates are Jonah Praise Moreno Ariola, Krizia Jane Molina Frias, Jay Vince Bagui Liwag, Byron John Santos Luna. Our group must be able to recreate the anime opening which we randomly picked. In our case, the video given was the opening of the anime "Ballroom e Youkoso". All the people that are shown in the video must be replaced by the group members, while still retaining the background of the anime. Some parts of the opening that the group found hard to shoot, may be shot from a separate location.

Our group started the exercise by shooting all the scenes in the anime in front of a green screen. We bought a green cloth and taped it in a wall at the side of the Student Union Building so that we have better lighting and a wider space. Our group tried to match the clothes of the anime characters as much as possible, as well as the movements and facial expressions. Other scenes that were hard to film in front of a green screen were shot in a separate location. After all the scenes were satisfyingly shot and

collected, a video editing application was used in order to piece together all of the scenes. The pace of each scene were also matched in the original anime using this application. Once the original anime and the filmed scenes were matched, the group then started to write the code that will implement the chroma keying. We divided the functions in the code into two, one for the images and one for the videos. The first step done is to convert the filmed video into hsv, frame by frame, using the function cv2.cvtColor(). Then, the program will detect the green elements in the current frame using a specified range of the color green in order to create a green mask using the function cv2.inRange(). The invert of the green mask was then obtained as it contains the necessary details, after all. The resulting mask was then applied to the current frame of the original anime. This step was repeated until the end of the video.

The following are screenshots of the final video of our chroma keying exercise: