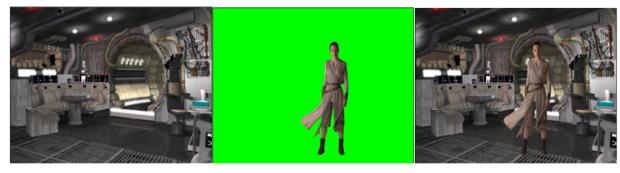# CVIT Session 23/05/2019 - Computational Photography Problem Set

1. In the technique of [chroma keying](), a particular color or a range of colors is used to represent a key color that can later be made transparent using a computational process – see Figure

(a) background image   (b) foreground image   (c) After chroma keying

(i.) Implement a function ChromaKey which takes two images fg,bg as input and RGB color keyColor corresponding to key color and outputs the chroma-keyed result. For example, Fig (a.) would be bg, Fig (b.) would be fg, keyColor would be [0, 255, 0] (green). Figure (c.) is the result.
(ii.) Show the output in a format similar to Figure above for the object in Figure below. Choose a suitable/realistic background image of your choice.

(iii.) Show the outputs for other object and background images of your choice. Be creative !

2. Sergei Mikhailovich Prokudin-Gorskii (1863-1944) was a photographer who, between the years 1909-1915, traveled the Russian empire and took thousands of photos of everything he saw. He used an early color technology that involved recording three exposures of every scene onto a glass plate using a red, green, and blue filter. Back then, there was no way to print such photos, and they had to be displayed using a special projector. Prokudin-Gorskii left Russia in 1918. His glass plate negatives survived and were purchased by the Library of Congress in 1948.

The goal of this assignment is to learn to work with images in MATLAB by taking the digitized Prokudin-Gorskii glass plate images and automatically producing a color image with as few visual artifacts as possible. In order to do this,

you will need to extract the three color channel images, place them on top of each other, and align them so that they form a single RGB color image.

Note that the filter order from top to bottom is BGR, not RGB!

The images are available in the RGB_Alignment folder.

Images : https://drive.google.com/open?id=1ri6HF6ojnZxaoRKV1NXW4vv2vGr6hsBR

Read: http://www.cs.cmu.edu/afs/cs.cmu.edu/academic/class/15463-f11/www/proj1/www/machongm/