Programming Part (*70 points*)

This assignment will help you gain a practical understanding of analyzing color channels especially as it pertains to chroma keying. In this programming assignment, you will write a program to composite two images with an implicit alpha channel. When compositing images, the foreground objects are normally captured in front of a "chroma" colored background – such as blue, green, black etc. During compositing, whatever is not the background chroma, will be a foreground object and is composited with the background object using relations discussed in class. Write a program which will take the foreground object and background image as input arguments and produce a composited image. Specifically you will have to

- Given a foreground image, find out what is the "chroma" of the image. This can be done by statistically sampling the colors of the image and creating a histogram. Assume that pixels which correspond to the chroma have the maximum frequency. Be aware that due to noise and quantization effects, this chroma color may not be a specific color but may be colors lying in a small range.
- Once the chroma has been detected, you can now remove the pixels which correspond to the object in the foreground images and composite them into the background image.
- Sometimes you will notice that aspects of the foreground image won't blend well into the background in certain high frequency areas. These are due to aliasing. Your program should appropriately remove such effects.

Images will be placed on the website and the format explained, which will be used for display. Assume that both foreground and background images will be of the same size. We should be able to run compile and run your code as

"yourProgram foregroundImage backgroundImage"

which should display an composited output.