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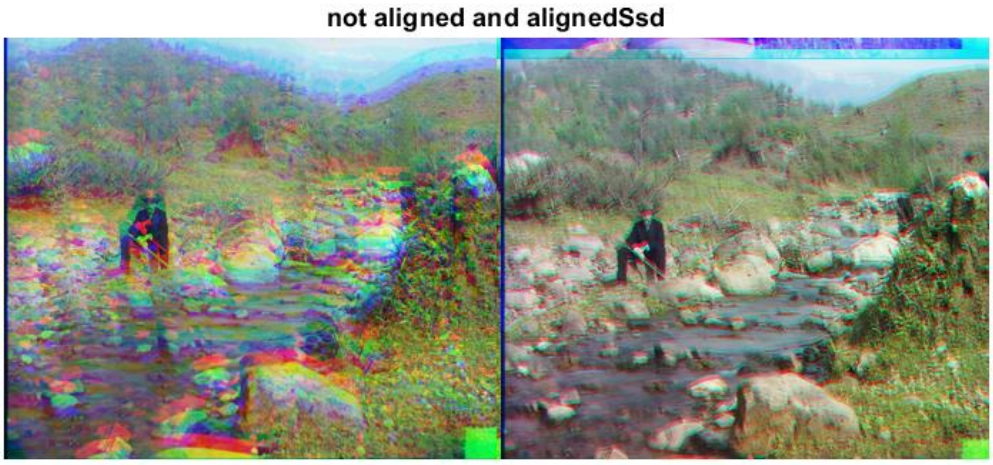
CMPE-362 HW-1

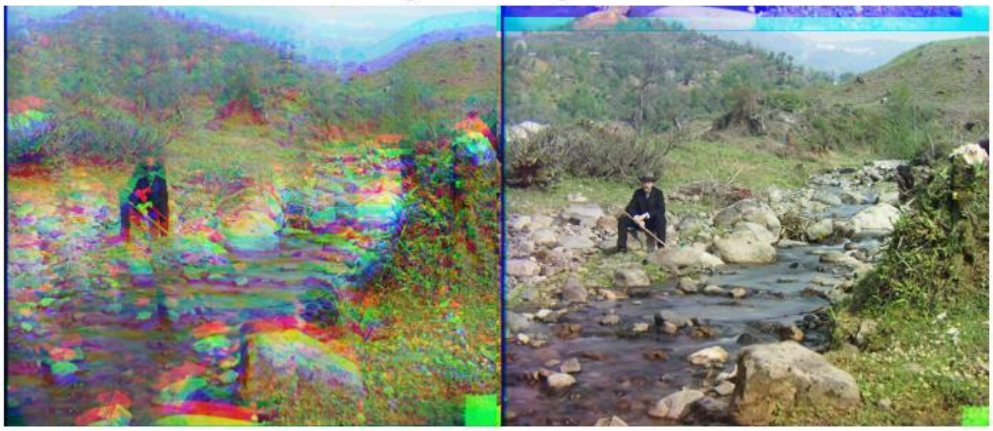
The problem is that when we place R,G and B channels on top of each other, there is some distortion on the pictures. To eliminate the distortion, we need to align these channels. First approach is to find pixel coordinates that correspond minimum sum of squared difference. Since R and G channels will be aligned to the B, focused sum of squared differences will be between R and B and G and B. When we find pixel coordinates corresponding minimum sum of squared difference, we will use circshift method and shift R and G channels with the obtained pixel coordinates. Then the result is as below.

Also, there is another way called normalized cross-corelation(NCC). Result is as below.

There is an issue that normalized cross- corelation method is better than sum of squared difference method on self_portrait.png.



not aligned and alignedNcc



There is another issue that sum of squared distance is better than normalized cross-corelation on emir.png.

alignedNcc and AlignedSsd

not aligned and alignedNcc

not aligned and alignedSsd

After alignment operation is done, enhancement operations were tried on pictures. There are two different enhancement operation comprised of gamma correction and histogram equalization. In gamma correction, imadjust method was used. Imadjust maps to low to bottom and high to top. Imadjust can take the gamma correction factor as a parameter. If gamma correction factor is one, the values between low and high are mapped linearly to values between bottom and top. If gamma correction factor is less than one, then the mapping is more intense on higher (brighter) output values.If gamma correction factor is more than one, then the mapping is more intense on lower (darker) output values. In the code, the gama correction factor is taken as 1.5.

alignedNcc and Gamma Correction

In histogram equalization, histeq method was used. Histeq method generates an image with equally shared pixels.

alignedNcc and HistEq