Elin_Ahlstrand_Exercises_3

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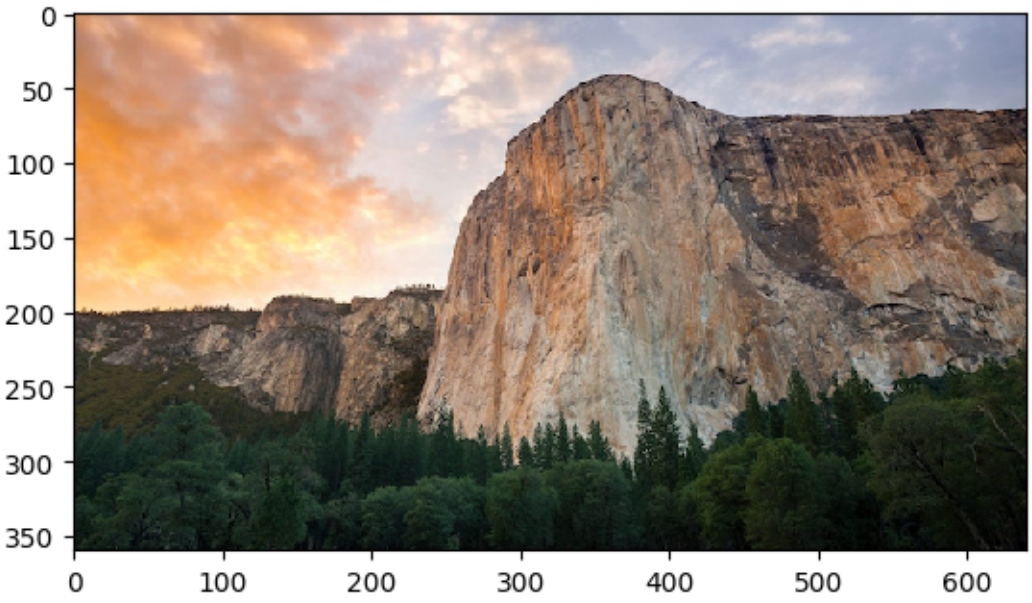
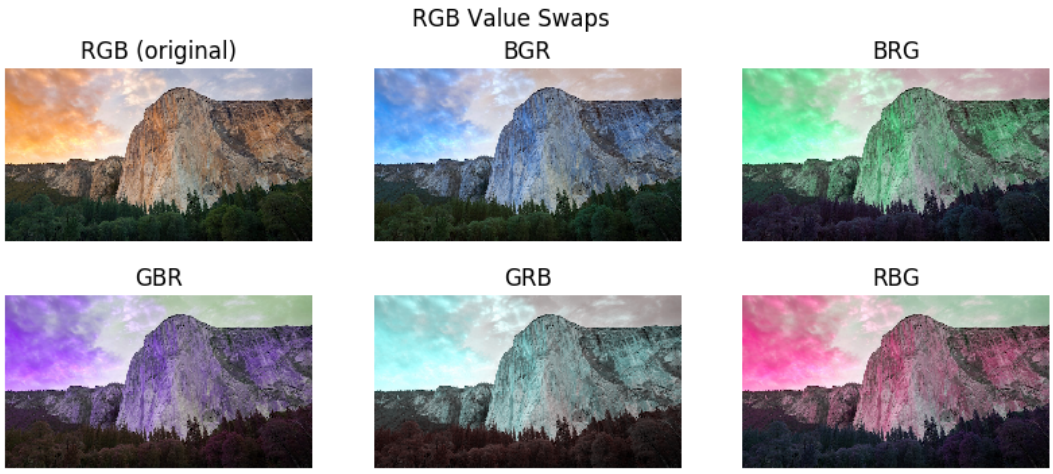
In [97]:
```
# Preparation
img = imread("el-capitan.png");
figure(1)
    imshow(img);

"""
image_RGB(arg1) -- outputs RGB values of pixels in image file
Reads an image file, extracts RGB values from the data of each pixel and
stores each value of R, G & B inside a separate array

Args:
   arg1 (str): filename

Returns:
   out (int): returns 3 arrays containing the R, G & B values of every image pixel
"""

function image_RGB(filename)

    img = imread(filename);
    R = img[:,:,1];
    G = img[:,:,2];
    B = img[:,:,3];

     return [R, G, B]
end

##===== Swap RGB values to create new images!
image1 = image_RGB("el-capitan.png");
#BGR
image2 = cat(image1[3], image1[2], image1[1]; dims=3);
#BRG
image3 = cat(image1[3], image1[1], image1[2]; dims=3);
#GBR
image4 = cat(image1[2], image1[3], image1[1]; dims=3);
#GRB
image5 = cat(image1[2], image1[1], image1[1]; dims=3);
#RBG
```

```
image6 = cat(image1[1], image1[3], image1[2]; dims=3);
##===== Create a figure to display swapped RGB values
fig = figure(figsize=(10,4))
    suptitle("RGB Value Swaps")
        subplot(231)
            imshow(img);
            title("RGB (original)")
            axis("off")
        subplot(232)
            imshow(image2);
            title("BGR")
            axis("off")
        subplot(233)
            imshow(image3);
            title("BRG")
            axis("off")
        subplot(234)
            imshow(image4);
            title("GBR")
            axis("off")
        subplot(235)
            imshow(image5);
            title("GRB")
            axis("off")
        subplot(236)
            imshow(image6);
            title("RBG")
            axis("off")
##=====
```

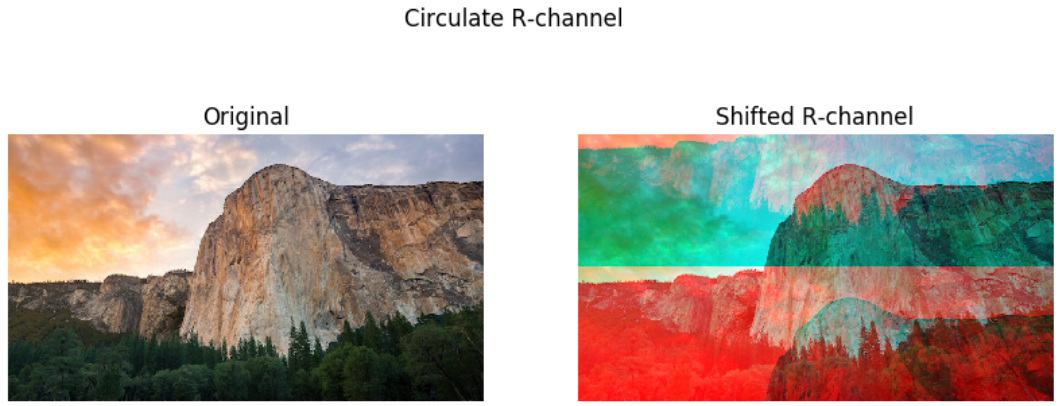




Out[97]: (-0.5, 639.5, 359.5, -0.5)

In [98]:
```
##=====Circular Rotation Function

"""
circulate_pixels_R(arg1, arg2) -- circulates red channel of an image
Reads an image file, shifts specified rows (p) of red channel in image and returns shif

Args:
   arg1 (str): filename
   arge2 (int): p -- number of pixels by which to shift p rows of the red channel

Returns:
   out (image): returns shifted image
"""

function circulate_pixels_R(filename, p)

        img = imread(filename);

    img_top = img[1:p+1,:,1];
    img_bottom = img[p+1:end,:,1];

    img[1:end-p,:,1] = img_bottom;
    img[end-p:end,:,1] = img_top;

    return imshow(img)
```

```
end

img = imread("el-capitan.png")


fig = figure(figsize=(10,4))
suptitle("Circulate R-channel");
    subplot(121)
        imshow(img)
        title("Original")
        axis("off")
    subplot(122)
        circulate_pixels_R("el-capitan.png",180)
        title("Shifted R-channel")
        axis("off")
```




```
Out[98]: (-0.5, 639.5, 359.5, -0.5)
```