```python
import cv2
import numpy as np
import math

# 과제 2번의 histogram_equalization 함수
def histogram_equalization(img):
    height, width = img.shape
    level = np.zeros(256)

    # histogram
    for x in range(width):
        for y in range(height):
            level[img[y,x]] = float(level[img[y,x]]) + 1.0

    # normalize & CDF
    for i in range(256):
        level[i] = level[i] / float(width*height)
        if i>0:
            level[i] = level[i-1] + level[i]

    # outpur gray level
    for i in range(256):
        level[i] = round(level[i] * 255.0)

    # set output image
    for x in range(width):
        for y in range(height):
            img[y,x] = level[img[y,x]]

    return img


def histogram_equalization_color(img):
    s = 0.85
    height, width, dim = img.shape
    (B, G, R) = cv2.split(img)

    # R,G,B를 YCbCr space의 Yi로 변환
    Y = np.zeros((height, width), dtype=np.uint8)
    Yi = np.zeros((height, width), dtype=np.uint8)
    for x in range(width):
        for y in range(height):
            Y[y,x] = R[y,x] * 0.257 + G[y,x] * 0.504 + B[y,x] * 0.098 + 16.0
            Yi[y, x] = Y[y, x]

    # Yi에 histogram equalization 적용
    Yo = histogram_equalization(Y)

    #원본 이미지로 복구
    for x in range(width):
        for y in range(height):
            out_pixel_B = Yo[y, x] * pow((B[y, x] / Yi[y, x]), s)
            out_pixel_G = Yo[y, x] * pow((G[y, x] / Yi[y, x]), s)
            out_pixel_R = Yo[y, x] * pow((R[y, x] / Yi[y, x]), s)

            # 결과 pixel값이 255를 초과하는 경우 255로 pixel값 설정
            if out_pixel_B > 255:
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                out_pixel_B = 255
            if out_pixel_G > 255:
                out_pixel_G = 255
            if out_pixel_R > 255:
                out_pixel_R = 255


            #결과 pixel 값 각 channel 별로 저장
            B[y, x] = out_pixel_B
            G[y, x] = out_pixel_G
            R[y, x] = out_pixel_R


    # img 재결합
    img = cv2.merge([B, G, R])
    return img

in_image = cv2.imread('dgu_night_color.png', 1)  # img2numpy
out_image = histogram_equalization_color(in_image)
cv2.imshow('dgu_night_in', in_image)
cv2.imshow('dgu_night_out', out_image)
cv2.waitKey()
```