DMET 901: Assignment #3
Due: Monday, December 11ᵗʰ, 2017 (11:59 PM)

Question 1 [Stereo Vision and Anaglyphs]:

As mentioned in class, the perception of the third dimension or the depth of the image comes from the fact that we have two eyes; each of them captures the scene from a slightly different viewpoint. Observing a scene through two cameras is called **stereo vision** (or **binocular vision**).

Anaglyph is the 3D effect obtained by combining the channels of a pair of stereo images. Considering 3-channel color images, the anaglyph results are obtained from **combining the green and blue channels from the left image with the red channel of the right image**. An example is shown below.

Red-cyan glasses:

In order to see the 3D effect, you need to look at the image using anaglyph red-cyan glasses. These are cheap glasses that can be purchased online. Try the following links:

- https://egypt.souq.com/eg-en/3d-glasses-for-movies-and-games-6511159/i/
- https://www.amazon.com/s/ref=nb_sb_ss_i_3_8?url=search-alias%3Daps&field-keywords=3d+glasses+red+blue&sprefix=3d+glass%2Caps%2C277&crid=3REP2UJB8JBKR

Question 2 [Stereo Vision and Disparity]:

Given a pair of stereo images, a widow size and a disparity range (i.e., two images, one number representing the widow size and four numbers representing the disparity range), you are asked to implement the disparity estimation technique discussed in class using SAD correlation. The minimum SAD values are stored in an output image. (Note that getting a dark output image means that good matching or similarity is obtained. You may need to use contrast stretching or histogram equalization to brighten the output.)

Assignment Regulations:

- You will work on this assignment *individually*.
- The due date is **Monday, December 11th, 2017 (11:59 PM)**.
- There will be evaluations.
- The assignment is to be implemented using openCV on either Java, C++, or Python.
- You may work on any stereo pairs of your choice.