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Question

1) Why do we need to know data structure of images?

2) How to access all pixels in a 2D image?

3) Why do we need to convert from RGB to other color channels?

4) If we change the value of luminance, does the color change? Why?

5) What is the difference between 2D, and 3D image?

Answers

1). The reason we need to know data structure of images:

- To access to pixel values regarding the coordinates(x,y).
- To browse an image from the first to the last pixel.
- To access to pixel(x,y) neighbor.

2. We can access all pixels in 2D image which one loop to store in 1D array which only one table while two loop to store in 2D array using two tables.
3. We need to convert from RGB to other color channels because:

- RGB values can be negative and after conversion, all the values become positive.
- Different channels have different uses, for example: RGB should not be used for printing because it will be affected.

- Easier visualization.
- To get more color.
- It is useful for detect object specification and recognition of colors.
- Easy to determine a specific color.

4). If we change the value of luminance, the color is not change into another color but it changes only the brightness or lightness of the color according to luminosity perception.

5). The differences between 2D and 3D images are:

- 2D image is “flat”, using the horizontal and vertical (X and Y) dimensions, the image has only two dimensions and if turned to the side becomes a line.
- 3D image adds the depth (Z) dimension. This third dimension allows for rotation and visualization from multiple perspectives.it is an essentially the difference between a photo and a sculpture. it is contains 3 dimensions (x,y,z) and represent length, height and width.