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### Assignment Discussion13

- 1) What is luminance?
  - Luminance is a photometric measure of the luminous intensity per unit area of light travelling in a given direction.
- 2) Explain how to make image darkness?
  - Extract all information (intensities) from original image by doing two loops.
  - Determine a modify value.
  - Do operation by taking each intensity in each pixel from original image  $m_i$  minus the modify value. If new intensity is smaller than 0, just make it 0. Be careful, for color image each intensity composes by 3 values: R, G, and B.
  - Generate new image (darkness image) by doing two loops. It means that take new intensities from step 3 and insert each pixel. Pixel in coordinate (0,0) must insert the new intensity from pixel in coordinate (0,0) too.
  - Save a new darkness image.
- 3) Explain how to make image brightness?
  - Extract all information (intensities) from original image by doing two loops.
  - Determine a modify value.
  - Do operation by taking each intensity in each pixel from original image plus the modify value. If new intensity is bigger than 255, just make it 255. Also, be careful of color image.
  - Generate new image (brightness image) by doing two loops. It means that take new intensities from step 3 and insert each pixel. Pixel in coordinate (0,0) must insert the new intensity from pixel in coordinate (0,0) too.
  - Save a new brightness image.
- 4) What is histogram equalization?
  - Histogram equalization is a method in image processing of contrast adjustment using the image's histogram.
- 5) Explain how to calculate the histogram equalization?
  - Calculate Histogram: Intensity Frequency
  - Calculate Cumulative Distribution Function (CDF): Normalize the histogram values by dividing them by the total number of pixels in the image. This normalization ensures they represent probabilities.
  - Get the input image.
  - Generate the histogram for the image.
  - Find the local minima of the image.
  - Divide the histogram based on the local minima.
  - Have the specific gray levels for each partition of the histogram.
  - Apply the histogram equalization on each partition.