Non-uniform illumination

* Intensity values (brightness) non-uniformly distributed across an image

Exposure Region

* The area specific within an image classified as under, over, or well-exposed with respect to the contrast, entropy, and intensity of the image.

Image Intensity

* The brightness of the image as perceived by the observer and quantitatively measured numerically between the range of 0 (black) to 255 (white) when evaluating a grayscale uint8 image in MATLAB

Image Contrast

* The degree of difference between the lightest and darkest parts of an image

Image Entropy

* The quantitative measure of data contained within an image pixel used to determine the amount of data contained as well as the degree of variation of data content between neighboring pixels

Dynamic Range

* The ratio between the largest and smallest values contained within a data set that a certain value can assume
* High Dynamic Range implies a larger set of values by which a pixel can assume throughout an image
* Low Dynamic Range implies a smaller set of values by which a pixel can assume throughout an image

Luminance

* The quantitative measure for the intensity of light from a surface per unit area in a given direction
* NOT TO BE CONFUSED WITH BRIGHTNESS WHICH IS A SUBJECTIVE ATTRIBUTE OF LIGHT INTENSITY

Under-exposed Region

* Area of low luminosity resulting in the deterioration of image characteristics because of the lack of sufficient light specific to the region of interest

Well-exposed Region

* Area of luminosity having little or no effect on the image characteristics specific to the region of interest

Over-exposed Region

* Area of high luminosity resulting in the deterioration of image contrast because of the over saturation of light specific to the region of interest
* Based on human perception, this region refers to a region that is bright or too bright and the details of that regions are lost and cannot be observed.

Exposure

* An image characteristic determined by calculating the single threshold value, which is the average of the gray level value of all the pixels in an image. Therefore, a pixel is under exposed if the intensity value is lower than the corresponding threshold value or over-exposed when the intensity value is higher

CIELAB

* This is a color space used in one of the methods researched by the contributors of the primary source of this research; [11] in their references
* International Commission of Illumination (CIE)
* L is the lightness (intensity) ranging from 0🡪 255
* A is the measure of green to red
* B is a measure of blue to yellow

Fuzzy Intensity Measure (FIM)

* This was one of the methodologies researched by the contributors of the primary source of this research; [9] in their references
* Determined by dividing the deviation grey level value with the average grey level value.
* If the intensity of a pixel is lower than the threshold value, then the pixel is classified as dark, otherwise the pixel is classified as bright.

Backlit Region Determination

* This was one of the methodologies researched by the contributors of the primary source of this research; [21] in their references
* The term “Backlit” alludes to images where the light source is behind the object of interest and in front of the image acquisition device (camera) illuminating the object from behind and accentuating its presence within the image

Adaptive Local Exposure-based Region Determination

* ALEBRD is the acronym commonly used in this research
* This was one of the methodologies researched by the contributors of the primary source of this research; [16] in their references
* Almost identical to this methodology with subdivision of regions into under, over, and well-exposed regions
* RGB to HSV conversion of image, V channel used to block process the image to evaluate intensity for the exposure regions classification.
* This is literally the same method used in this research EXCEPT the entropy and contrast conditions were NOT used in the exposure regions classification.