Al Amin Siddique

RGB to Grayscale Conversion:

The RGB to grayscale conversion algorithm aims to transform a color image represented in the RGB (Red, Green, Blue) color space into a grayscale image.

The conversion algorithm calculates the grayscale intensity of each pixel by applying a weighted sum of its RGB components. It utilizes the luminosity method, which assigns different weights to the red, green, and blue channels based on their perceived brightness by the human eye.

grayscale\_value = 0.21 \* R + 0.72 \* G + 0.07 \* B

This algorithm iterates through each pixel of the RGB image, extracts its RGB values, and calculates the corresponding grayscale value using the luminosity method. It then assigns this grayscale value to the corresponding pixel in the grayscale image.

Grayscale Histogram Calculation:

The grayscale histogram algorithm computes the distribution of pixel intensities in a grayscale image.

It iterates through each pixel of the grayscale image and counts the frequency of each intensity level (from 0 to 255).

After processing all pixels, the algorithm generates a histogram, which is a graphical representation of intensity frequencies, where the x-axis represents the intensity levels and the y-axis represents the frequency of occurrence for each intensity level.

RGB Histogram Calculation:

The RGB histogram algorithm calculates histograms for each channel (red, green, and blue) of an RGB image.

Similar to the grayscale histogram algorithm, it iterates through each pixel of the RGB image.

For each pixel, it extracts the intensity values for the red, green, and blue channels and updates the corresponding histograms.

After processing all pixels, it generates three separate histograms—one for each color channel.