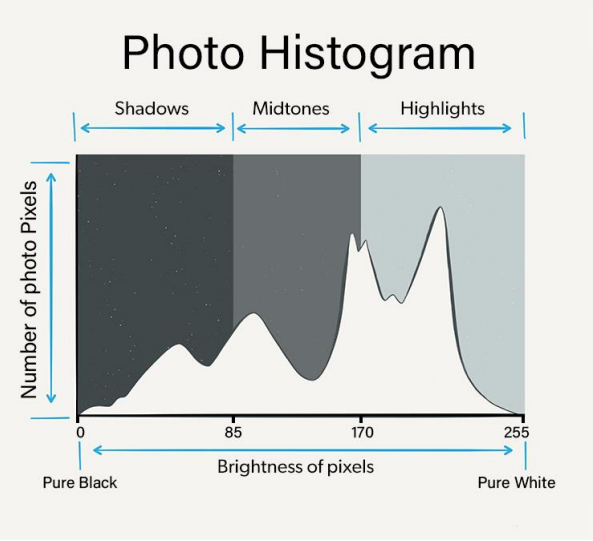
In this project we calculated the histogram, mean, median and standard deviation for photo color values and tried to make prediction based on median value of the photo to decide if it is a morning photo or a night photo

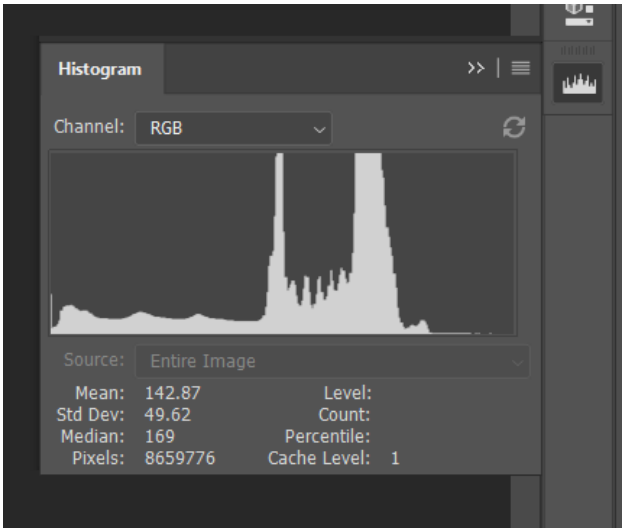


First we want to illustrate the meaning of photo histogram

Reading the histogram of the photo is so simple

Photo pixels that has brightness values from 0 to 85 is considered shadows, from 85 to 170 is considered Midtones and from 170 to 255 is considered Highlights

Generally photo histogram, mean, median and standard deviation is used in photo editing softwares to help you more understand the photo color values



A Screenshot From Adobe Photoshop

Libraries and packages used:

matplotlib: to calculate and plot the histogram

cv2: to read the photo

numpy: to read photo pixels as 2d array with color values and calculate mean, median, standard deviation

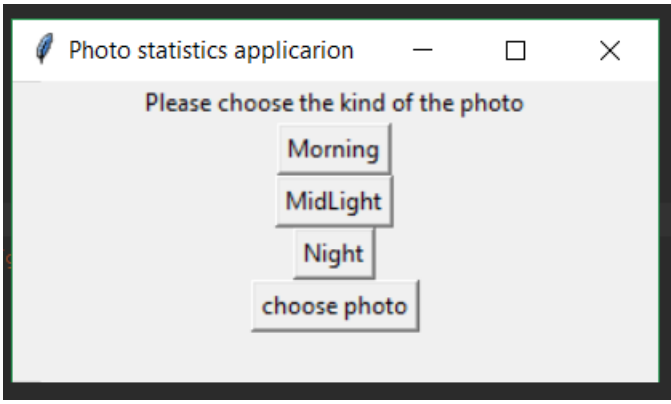
tkinter: for the GUI

Run:

In the program interface you have the ability to choose one of 3 available photos :

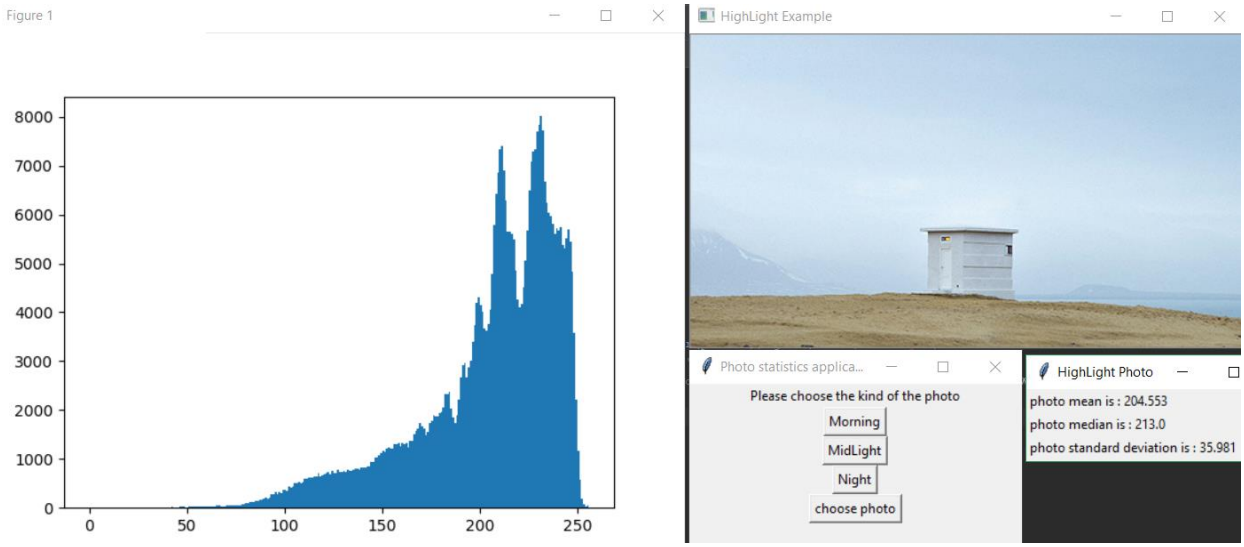
Morning photo (Highlight), MidLight photo (Midtones), Night photo (Shadows)

Or you can choose your custom photo

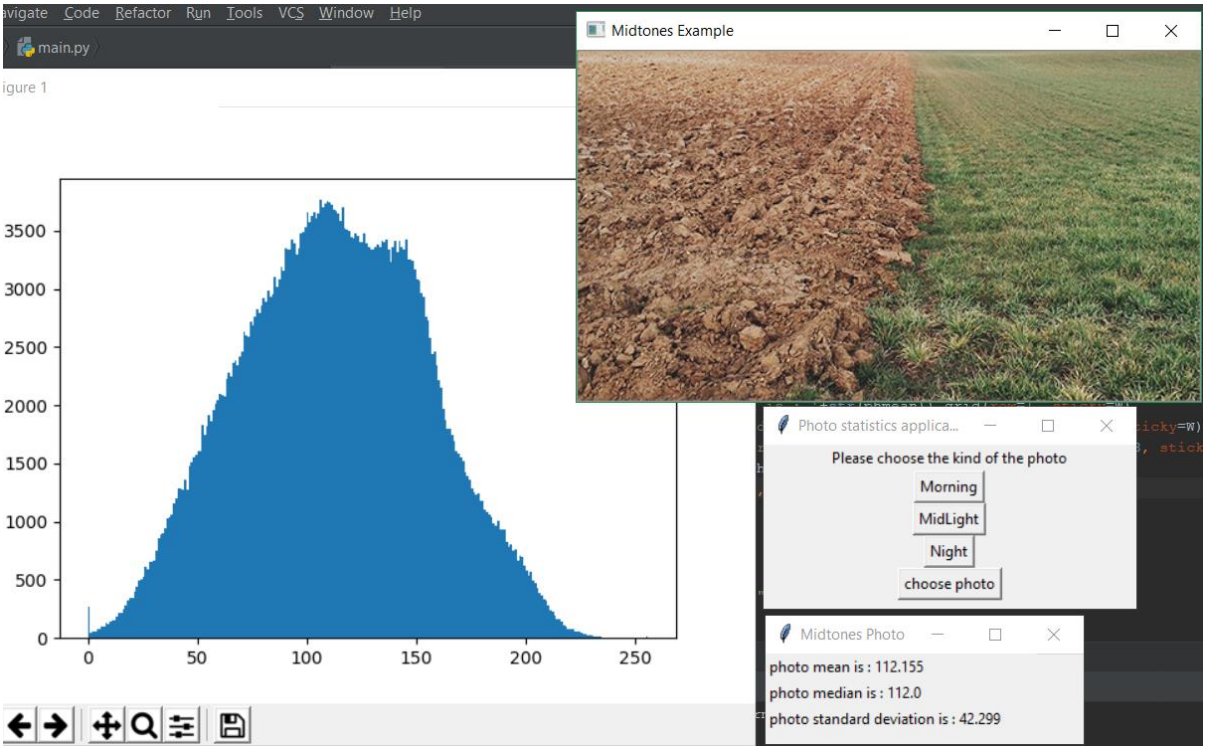


We can see that:

in the Morning photo histogram color values are concentrated in the highlight range

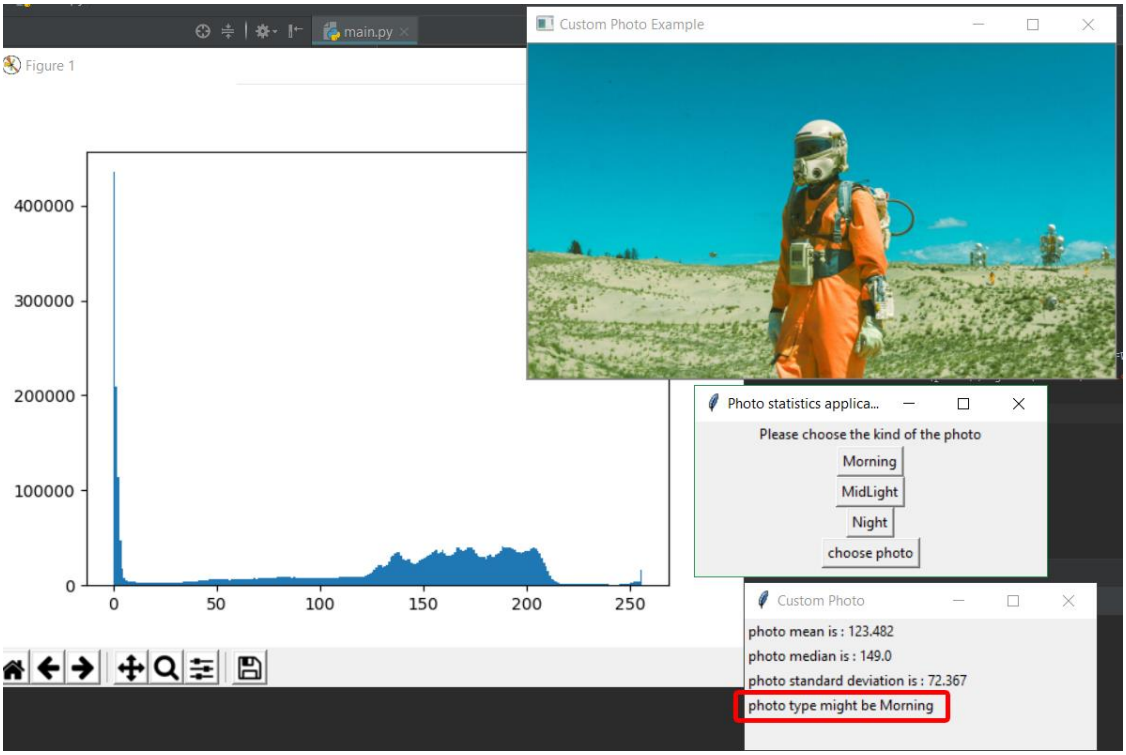


in the MidLight photo histogram color values are concentrated in the Midtones range

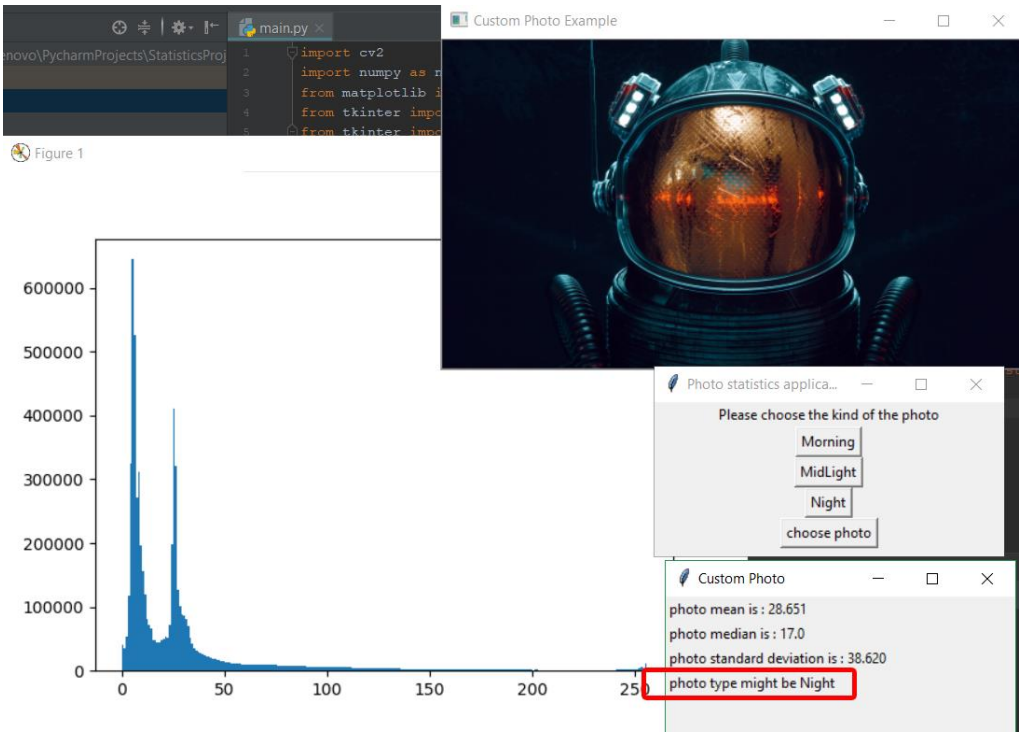


in the Night photo histogram color values are concentrated in the Shadows range

And finally you can choose your own photo and the program will predict if it is a morning photo or a night photo based on median photo (photos with median value below 85 have good chance to be Night photo)



Morning photo prediction example



Night photo prediction example