

Media Programming: Web Technologies Lab 01

Exercise A1-1

Histogram

- a) Download the file `histogram.zip` from moodle. Unzip it.
- b) Enter the directory `histogram` and open `index.html`. You may need a local web server to do it. If you are using Python 3, you can start a local web server by the command `python -m http.server`. See https://developer.mozilla.org/en-US/docs/Learn/Common_questions/set_up_a_local_testing_server.
- c) The application is intended to calculate histograms of images. You can load an image by clicking the button **Browse...**, select a width of bins of the histogram, and the application automatically shows three histograms, for the red, green, and blue channels, respectively. For example, Fig. 1 shows the image `lena_klein.jpg`, with its brightness being 0, and the histograms with a width of bins of 16. We can see that the red channel in this image is considerably more intensive than the green and blue ones.
- d) Extend the file `histogram.js` to achieve the following:
 - When an image is loaded in the application, the histograms are automatically generated and displayed
 - When the user changes the value of the brightness slide bar, then the current value is displayed as a number, and the image is updated accordingly
 - When the user clicks the button **Restore**, then the original image is displayed, and the brightness set back to 0
 - When the user changes the brightness, clicks **Restore**, or changes the value of **Bin width**, then the histograms should be updated automatically
- e) The current GUI is very primitive. Improve it.

Notes

- Use the library `Chart.js` <https://www.chartjs.org/> to generate the chart.
- You may need to know something about `ImageData` of the HTML5 `canvas` API. See <https://developer.mozilla.org/en-US/docs/Web/API/ImageData>



Figure 1: Screenshot