# SPRINT – FEBRUARY 2023

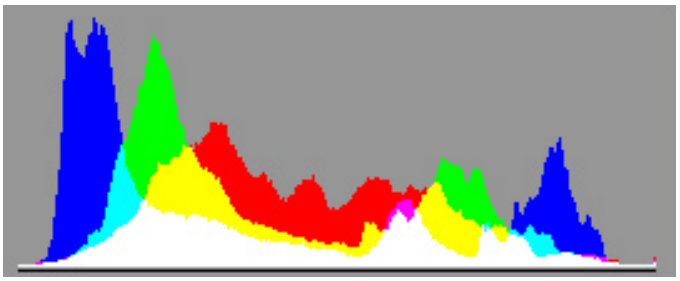
Three days to create a real web application dedicated to real-time color visualization.

## Goals

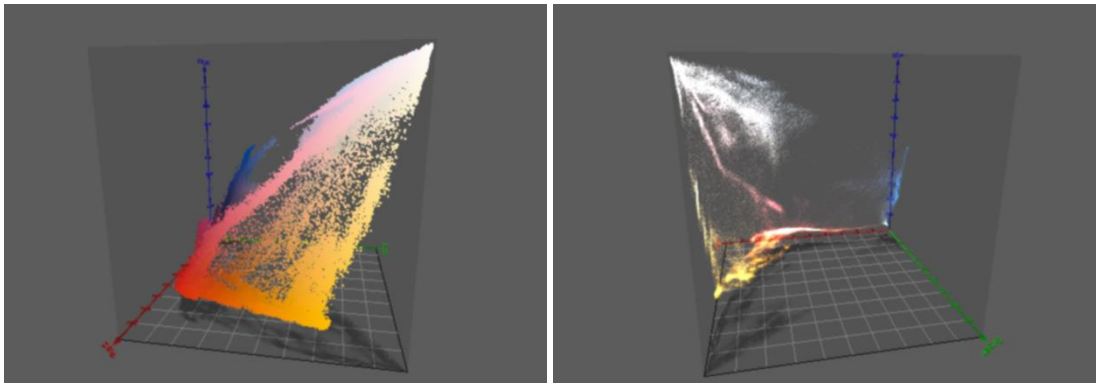
You will have to visualize the color data from either the webcam on your laptop or the cameras on your Android or iOS smartphone.

The color information, in a given color space (RGB, CIExyY, CIELAB), present in the images displayed as such:

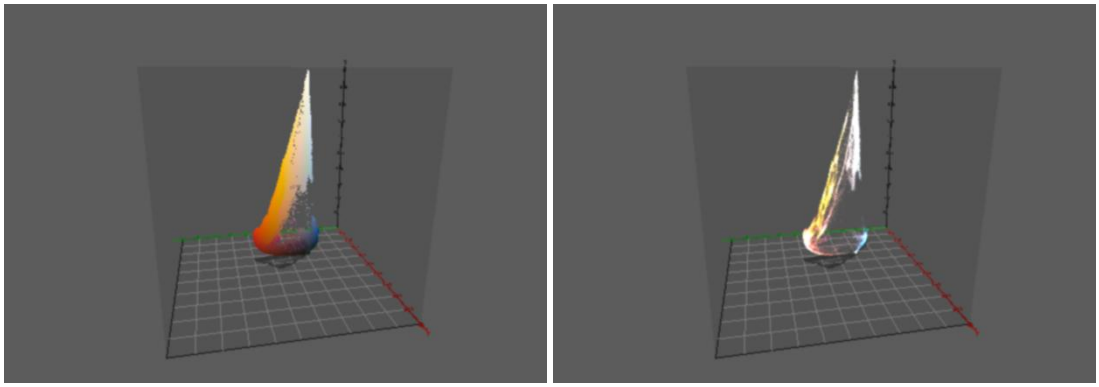
- A 3x1D RGB histogram



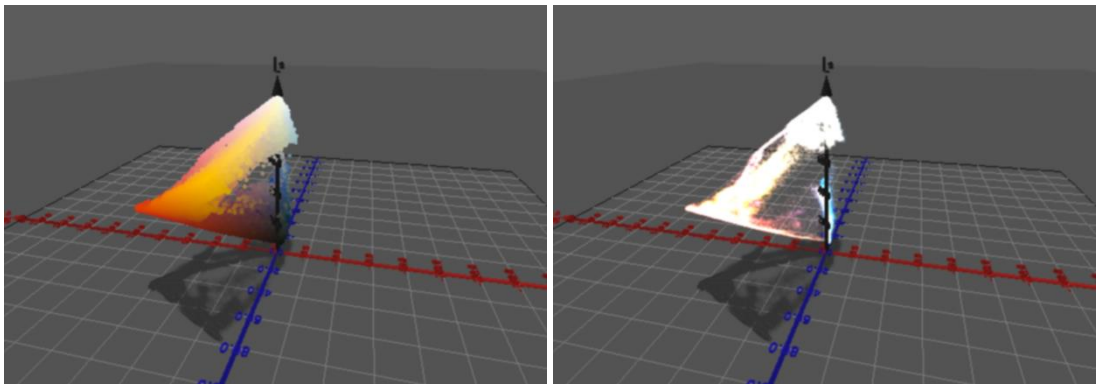
- A color cloud with or without density in RGB, CIExyY, CIELAB color spaces



RGB Color space – Left direct visualization – Right density visualization



CIExyY Color space – Left direct visualization – Right density visualization



CIELAB Color space – Left direct visualization – Right density visualization

**All these visualizations need to be superimposed on the video stream coming from the camera.**

# Color conversions

## sRGB to CIEXYZ

see https://en.wikipedia.org/wiki/SRGB

## CIEXYZ to CIExyY

see https://en.wikipedia.org/wiki/CIE_1931_color_space#CIE_xy_chromaticity_diagram_and_the_CIE_xyY_color_space

## CIEXYZ to CIELAB

see https://en.wikipedia.org/wiki/CIELAB_color_space