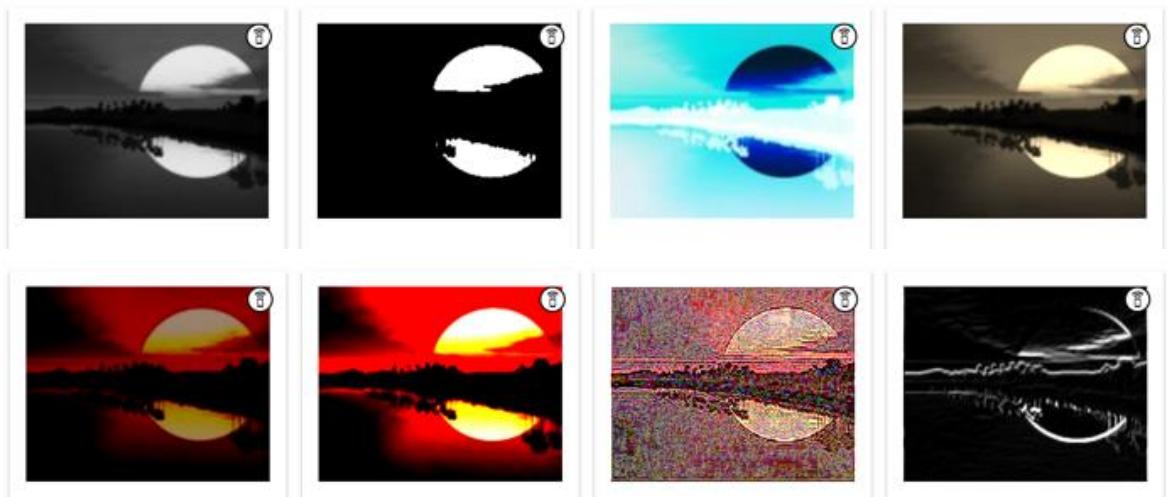


PROJECT REPORT STUDY WEEK “FASCINATING INFORMATICS”

Liquid Camera



C. Fleischmann
A. Gottschall
S. de Montmollin

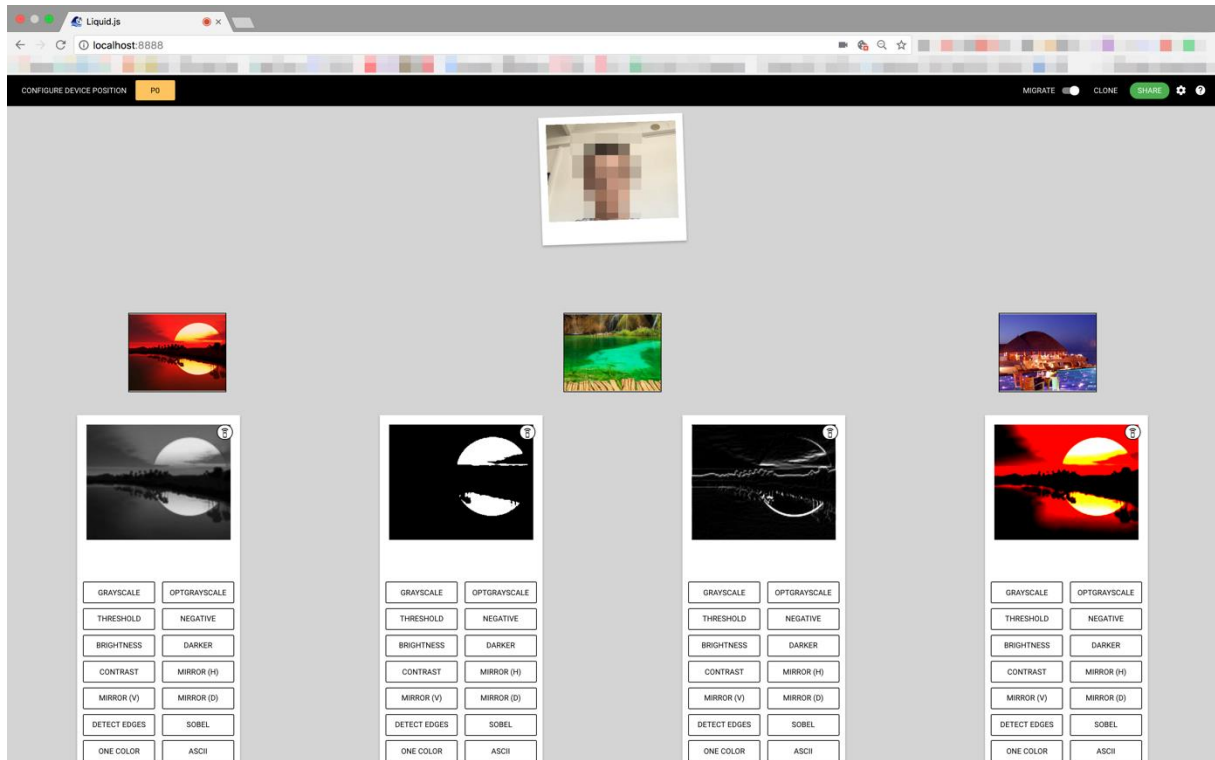
Kantonsschule Zürcher Unterland, Bülach, Switzerland
Kantonsschule im Lee, Winterthur, Switzerland
Lycée Denis-de-Rougemont, Neuchâtel, Switzerland

Supervised by: Andrea Gallidabino

Date: 25 September 2018

Abstract

The Liquid Camera is a web application, called “liquid.js”. There – users can take a picture with their webcam or drag and drop some pictures into this application. One can apply different filters and share the process and the result live with some other devices e.g. a mobile phone or another computer.



1. Introduction/Question

The goal of this project was to get an insight on the image processing research field. First, one has to understand how images are stored digitally and how you can modify the information of each pixel to get desired effect in the form of filters.

2. Materials & Methods

- Computer
- Javascript (HTML)

We first thought about how the filter works and then sketched it with pen and paper. Sometimes we wrote pseudocode. Afterwards we wrote in Javascript and looked at the outcome. When there were bugs you could often deduct from the result what was wrong and go back to change it. The code was debugged until he was error free and included every exception.

3. Results

We have created an application where we can apply filters on pictures. We have created 12 filters (GRAYSCALE, OPTGRAYSCALE, THRESHOLD, NEGATIVE, BRIGHTNESS, DARKNESS, CONTRAST, MIRROR_VERTICAL, MIRROR_HORIZONTAL, CONVOLUTE, SOBEL, ALPHA).

4. Discussion

After learning how to make these filters, we had the opportunity to combine multiple filters. However, the order of the filters is very important. We also took a closer look at the framework of our project: liquid.js. As already mentioned, it is possible to mirror one screen in the browser live to another one. But in comparison to other softwares, no central server is needed.

5. Acknowledgements

Huge thanks to our tutor Adrea Gallidabino.

Thanks also to the Hasler-Stiftung for funding and Swiss Youth in Science for organizing the study week.