Visible Touch: An Interactive UI for Designing Patterns on LED matrix

Context

Touch is our primary non-verbal communication channel for conveying intimate emotions and as such essential for our physical and emotional wellbeing. However, even though there is increasing evidence that mediated touch affords affective communication, current communication systems still do not support communication through the sense of touch.

Although there are some prototypes and products like HardLight Suit or TESLASUIT that using vibration or electrical signals to generate feel of touch, it is still hard to express feelings and emotions with these devices because of the limitation of the device.

Meanwhile, there are some researches proof that there is a strong relationship between vision and tactile. Vision information can not only enhance the sensitivity of the skin, but also creating illusions sensational because of the vision-touch synaesthesia.

Task and Goal

The goal of this project is to create a user interface for designing gestures and patterns (i.e. stroking, patting, squeezing the forearm) and display those gestures on the LED matrix which is going to be built as a wearable device in the next stage. Different gestures have different shapes, sizes, colors and we should be able to modify these parameters on the user interface directly. Then with a lot of frames it can be like a real movement on the LED matrix. (You can see an example of it in the movie “Ready Player One”, the haptic jacket “X1”).

So the interface should have following function: 1. Modify the size of the LED matrix display. (Within 20*20) 2. Modify each frame and each pixel individually with different shapes and different colors. 3. Output can be .gif or a video or a series of RGB matrices which can be used on display afterwards. 3. Pre-define some gestures which convey different feelings as examples.

You will be able to use the technology of your choice (i.e. JS, Java or C++) and implement this system on mobile or desktop according to your preferences. The focus will be on the graphical interface and the way to express emotional messages.

Supervisors

Eric Lecolinet, eric.lecolinet@telecom-paristech.fr, http://perso.telecom-paristech.fr/~elc/
Marc Teyssier, marc.teyssier@telecom-paristech.fr, https://www.marcteyssier.com/

References