

Hypnosia Calibration

Graduate

De Campos Ruben



Objectives

This project aim is to develop an application to calibrate a matrix of 84 biaxial clocks from the company SOPROD SA in the context of the Hypnosia project in which we are developing a display based on physical clocks. This calibration process is based on a portable image processing application to detect the positions of each clock hand and calibrate them.

Methods | Experiences | Results

The project uses an Android smartphone at its core, using the Kotlin programming language, along with the OpenCV library, which is used for image processing and detecting the clock hands positions. This detection is done by finding all the clock centers contours, then by calculating the intersections between each clock hand edges, which are found using the HoughLineP method.

Once each hand position and angle have been detected, those values are used to calibrate the matrix. Thus, the computed values are transferred over a Bluetooth serial port to control the physical clocks hands.

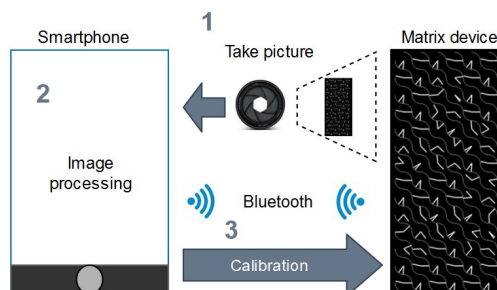
The whole Hypnosia project is two-fold: the part presented here takes care of the smartphone and calibration part of the Hypnosia product whereas the physical matrix is developed in another project called "Hypnosia Controller". For this reason and to decouple the results of both sub-projects, the tests have been carried-out first on a synthetic testbench and will be ported on the real device later on.

Bachelor's Thesis
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Degree programme
Systems Engineering

Field of application
Infotonics

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Bloc diagram of the calibration process. The user takes a picture with his smartphone, it processes the image, and calibrate the device.



Main view of the smartphone application to control the matrix device via Bluetooth.