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Semester Project
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ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

Toygether
A connected plush toy for distant child/parent play sessions

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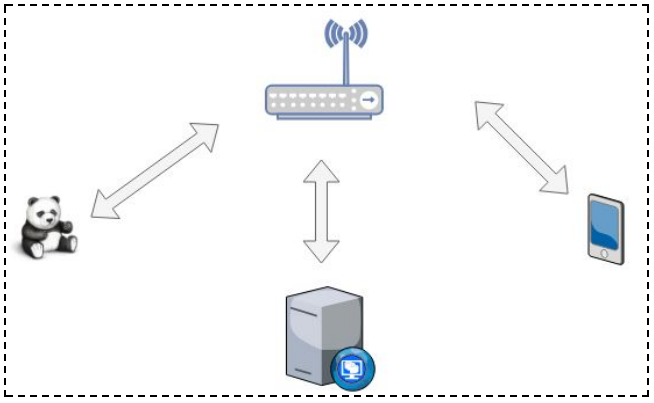
Introduction

Our product, named Toygether, is a connected plush toy that enables children to play with their parents, even when far away. The plush toy is screen-less and the electronics are hidden, allowing the parents to stay in contact with their kids, without having to rely on too present screens.

Goals

In team composed of a business school student, two designers and three engineers, the goal of CHIC (China Hardware Innovation Camp) is to develop a connected device in relation to the "Urban communities" theme, given to us at the beginning of an ideation process (September 2017). After developing multiple prototyping iterations during the semester, the manufacturing will be finalized during a fieldwork experience in Mainland China within local electronic factories.

Summary



At the end of this spring semester of development, the team managed to get a functioning Android app which communicates Wi-Fi with the ESP32 development kit embedded on the plush toy. The system is supported by a server software as illustrated in the picture of the the overall system architecture. The intercommunication between each actor of the system is defined in a custom-built protocol of messages, shared between them over the TCP network.
On the electronic side of the project, the first iteration of PCB has been ordered and will soon be mounted and tested. The PCB has been developed to customize the needs for the electronic components inside the plush toy. The toy integrates components such as LEDs and capacitive sensors, directly inside the textile skin. All the electronics (both in the central body and the capillary components on the skin) are driven by the firmware execution inside the microcontroller.

Future considerations

The future work of the electronic, firmware, software and mechanical fields of the project will be to finalize, test and improve the results obtained until now, to eventually start producing and commercializing the plush toy.
The goal of this summer trip to China will be to come back to Switzerland with at least two fully working prototypes. One would be kept by Mr. Laperrouza, founder of the CHIC adventure, who might showcase our prototype to the students of the following CHIC editions. The second plush toy would stay with the *Toygether* team, to eventually present the project to investors, or simply keep some memories from this interdisciplinary experience.