PORTFOLIO
My Projects

2021 - INTERNSHIP

Guillaume Ketobiakou

TABLE OF CONTENT

SECONDARY SCHOOL PROJECTS

SCHOOL OF ENGINEERING PROJECTS

PERSONAL PROJECTS

Welcome to my Portfolio !
I tried to summarise in that document all the projects that I found important to present.

" Driven by innovation and new technologies, I would like to orient my studies towards mechatronics robotics, & embedded systems. As a fourth year student, I also enjoy learning by myself & being involved in projects. "

Guillaume Ketobiakou

SECONDARY SCHOOL

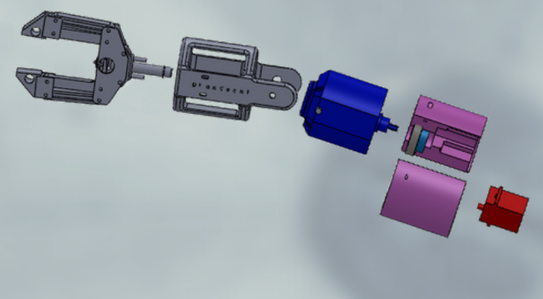
Diancecht

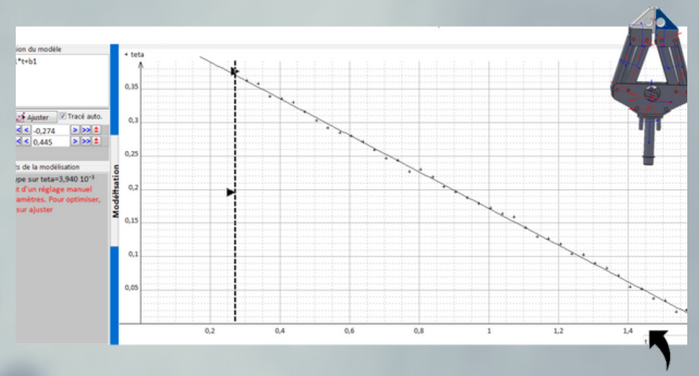
Diancecht is a prototype of a **low-cost, 3D printable hand prosthesis**. It took part of a project necessary for the acquisition of the diploma. My group and I chose to work on a hand prosthesis **that responds to muscular solicitations**, printed in 3D. **I was in charge of the mechanical design & CAD**, as well as the **parameterisation of the motorisation** (servomotors). The prototype had to :

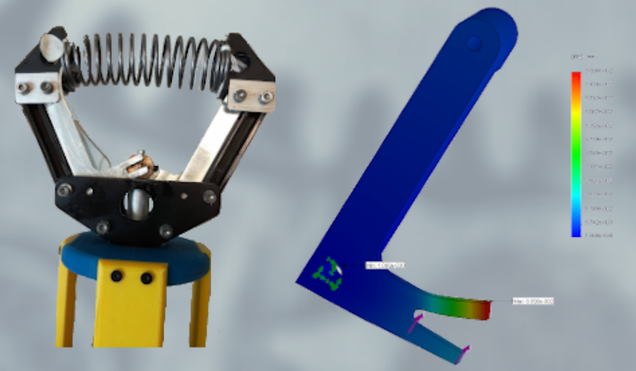
- Develop at least 15N of clamping
- Weight a maximum of 500g
- Measure a maximum of 40cm
- Reproduce wrist movements with a load of 100g.

Skills / Technologies :

- Dynamics
- Computer Aided Design (Solidworks)
- Electronics and motor sizing
- Arduino
- Strength of materials (SimulateurXpress)







SCHOOL OF ENGINEERING

1st year

Sound Synthesizer

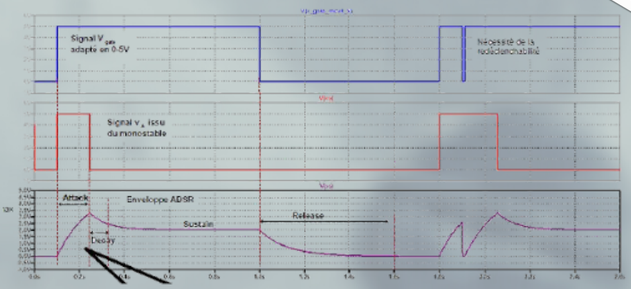
The goal of this project was to **transform the MIDI (numerical) frames** transmitted by a keyboard **into equivalent notes**.

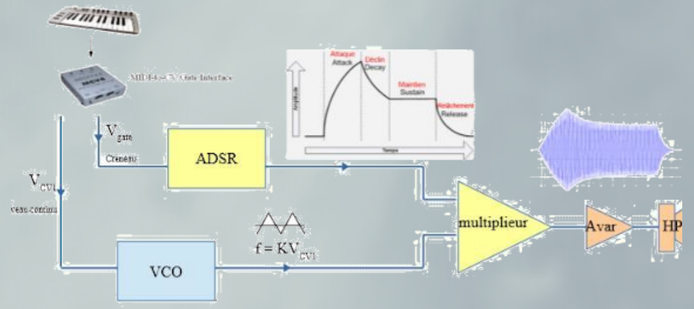
- MIDI frame to device MCV4 : key pressed, duration of the pressure.
- Voltage-controlled oscillator : from MCV4 to a triangular signal of fixed amplitude and frequency (transistors).
- From triangular signal to an ADSR envelope (which makes the sound more punchy or softer, immediately or progressively present, short and efficient or long and hovering, ...).

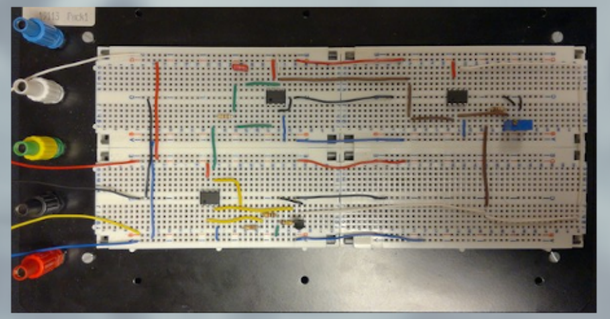
Skills / Technologies :

- Electronics

- Computer Electronics Design (LTSpice)







SCHOOL OF ENGINEERING

3rd year

Sound Analyser

Part of our "*Human Science for Engineer*" course.
During a "hackatlon", organised by "Les Petits Débrouillard" (an association for popularising science for young people), we chose to build a **sound analyser**.

- Five columns reacting to five frequency ranges of any song.
- A Arduino Uno and FFT libraries for the sound reception and analysis
- Led bars to represent the different peaks.

As this was a hackatlon and we were running out of time, we chose to focus on delivering a **functional** product **rather than aesthetic** product (MVP).

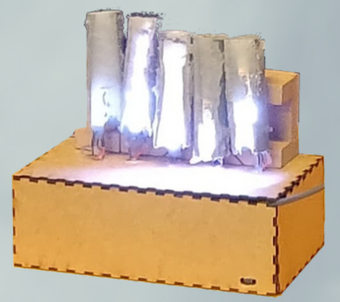
Skills / Technologies :

- Electronics

- Arduino

- Soldering

ARDUINO™



SCHOOL OF ENGINEERING

3rd year

Walkin' Trees

Demo video on request

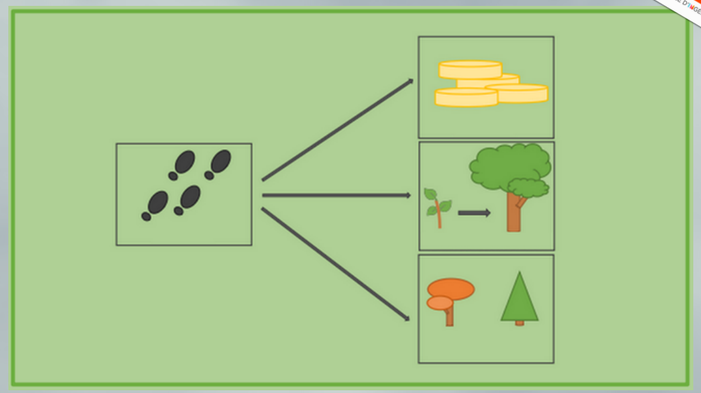
Walkin' Trees is a **Android app**, which objective is to encourage people in a playful way to walk more and appreciate nature. I am very proud of the collaboration and result that my partner and I have achieved on this 2 months' project.

We put in place a isometric 2D generator with dynamic display, shop & inventor, a "monetary system" linked to the user's daily steps and statistics over the user's progress.

I also **discovered** the **versioning of IT projects** with GitHub, and we decided and tried to put in place the **GitFlow**.

Skills / Technologies :

- Java, SQLite & XML
- Git, GitHub & GitFlow
- UML
- AndroidStudio



SCHOOL OF ENGINEERING

3rd year

Projet IHH : Partage Digital

Part of our "*Human Science for Engineer*" course.
IHH stands for " Ingénieur(e) Honnête Homme ", which represents a engineer conscientious that (s)he will have to be aware and have raised awareness of the impact of technical achievements on the environment and people.

We wanted to move away from the notion of money to get closer to human contact. We **decided to address inequalities in education**.

- We chose the **prison environment. I**t is a **little-known environment**, with many **preconceived ideas**, and with a **low level of attention**.
- We tried to impact the r**eintegration of prisoners. What could we bring**, in line with the current world and our teaching at ENIB ?
- We had a fairly **short period** of time, so we turned to **office automation** and **computer courses**.

We believe that beyond knowledge, our intervention brought **an alternative to the prisoners' daily life**.

Despite the Covid-19 interrupting this project, we had the time to do several seances, which were for me a wake-up call about the existing inequality and importance of the education.

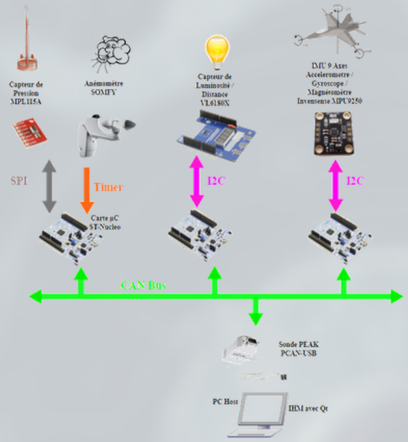
SCHOOL OF ENGINEERING

4th year

Several projects & tech's from this fourth year.

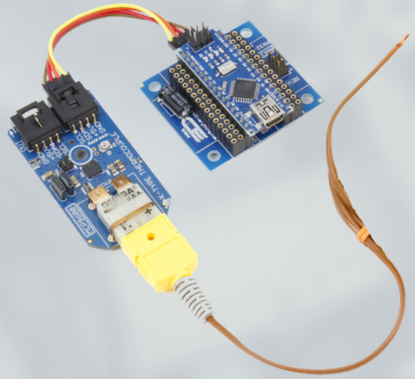
Sensor network

3 sensors
3 processors
1 CAN bus
Series of data to get & transmit



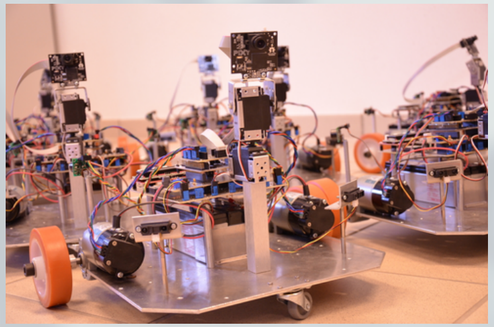
Thermocouple

5 thermocouples
5 circuits to design
1 processor & USART
A board to print and solder



Mobile Robot

Motors & Servomotors
Captors (distance, ultrasound, ...)
Processors (I2C, SPI, ...)
We have to program this robot



Every project includes processors from different companies, with different architecture

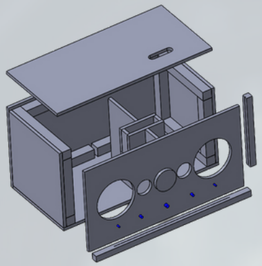
Even if the semester hasn't ended yet ...

PERSONAL PROJECT

Several personnal projects.

Boombox

In high school, during my spare time, I **decided to build a boombox**. I made it with a pair of car speakers, an audio amplifier, medium density fibreboard (MDF), covered with leather and suitable for home power. This speaker works in Bluetooth, USB and auxiliary, and its power is about 2x25W.



Tv & smartphone repair

For the Tv, I had to test the computer's power supply and motherboard in secure mode to find out what the problem was.
This led me to **discover** and study **the basic principles of switched mode power supplies**, LEDs, and try to apply the techniques learned in class to a concrete problem. It was a good **introduction** to **power electronics**.
I also always repair my phones by myself whenever I break something on it.

2021 - INTERNSHIP

Thank you for taking the time to read this portfolio.
Please feel free to contact me if you need any further information.

Guillaume Ketobiakou