Portfolio 2022 Santiago Andújar



## Hi! I am Santiago and I'm looking for a Design Engineering internship.

## Who am I?

I am a MSc student in Integrated Product Design at TU Delft. I consider myself a Design Engineer who is capable of solving technical problems with a creative approach. I personally enjoy making concepts feasible for manufacturing through Iterative Prototyping and CAD/CAM modelling.





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# DBS

## Conceptual design of Deep Brain Stimulation wearable



A medical wearable is an object that not only needs to be functional but it has to be appealing for the user. In the end, it has to be as pleasing as a piece of clothing that someone would buy.

Then, the challenge was to design a wearable that is appealing as well as solving the technical problems of this kind of device

This was my first project at redLoop, the goal to develop a non-invasive innovative neurostimulation wearable device that can be rapidly accepted by clinicians and patients.

While doing this project I realised how it is to work in a real design consultancy environment, this was my first glimpse of what being a professional product designer or design engineer is.

Group project (4 interns + supervisor)
Internship at redLoop
Duration: 1 week (Sept. 2021)
Supervisor: Dr. Andy Bardill

## Deep Brain Stimulation device

#### 1. Initial research

We spent a couple of days analysing everything we could find on the internet not only about other DBS devices but any device, fashion item or accessories that are worn on the head: from headphones or stage microphones to sweatbands and VR sets.

We selected pictures that we felt conveyed the aesthetic we were looking for.

#### 2. Concept generation

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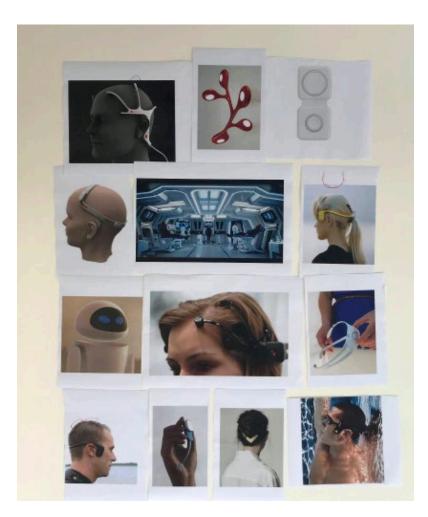
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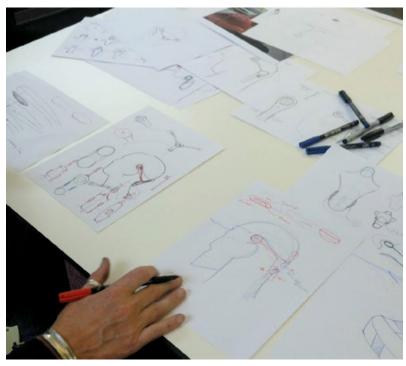
## 3. Iterative prototyping

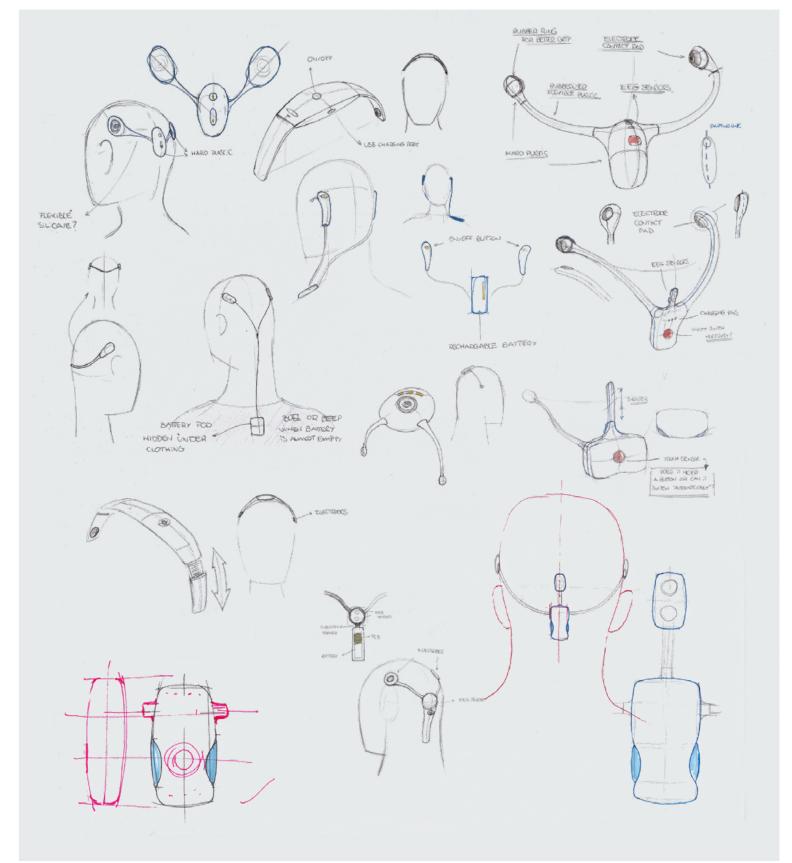
With the help of increasing fidelity prototypes, we were able to pinpoint along the way problems to be solved.

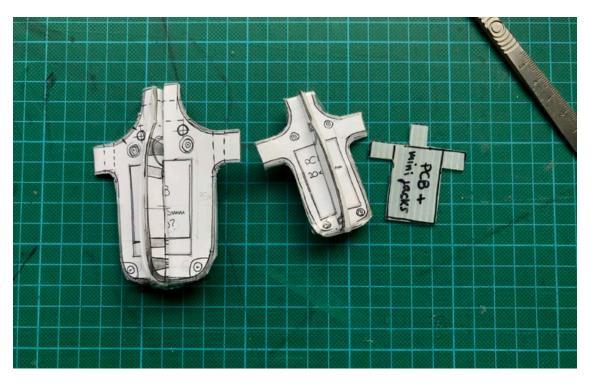
#### 4. Design for Manufacturing

As we wanted to develop something realistically feasible in mass production we had to consider the technical requirements of injection moulding for plastics. That means making sure parts are mouldable, from what material they have to be made of, etc.





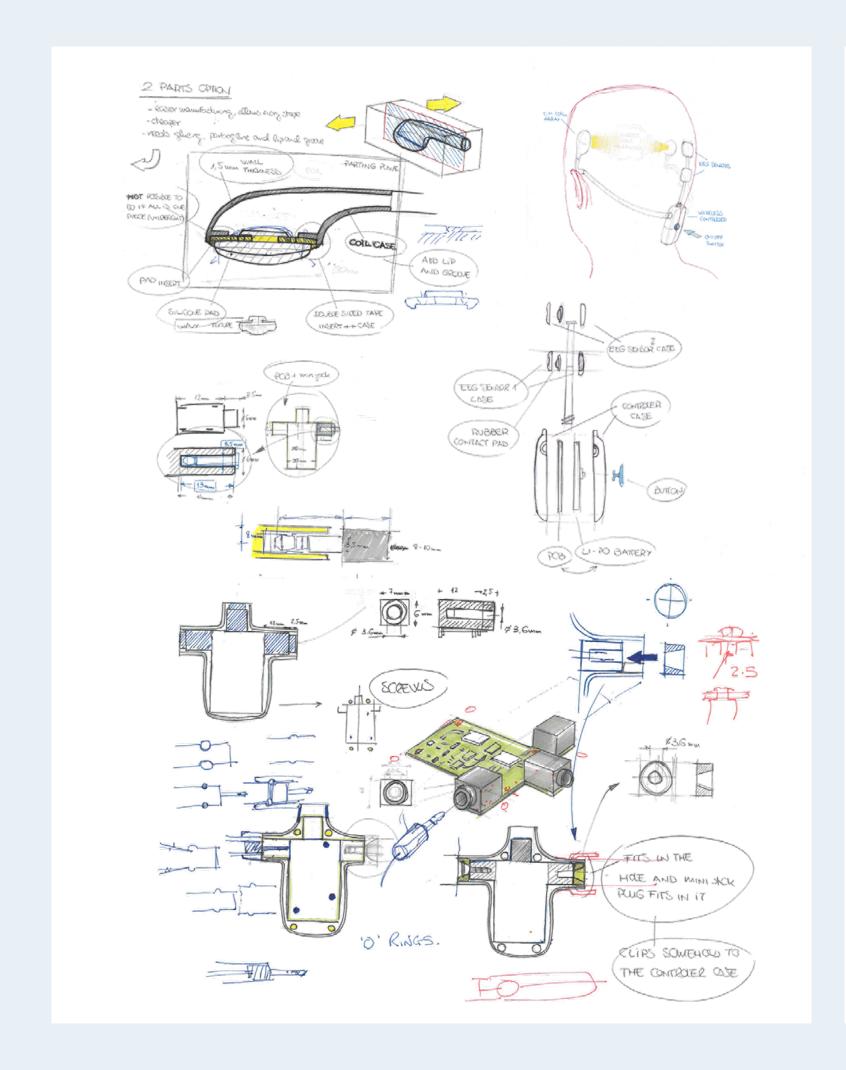


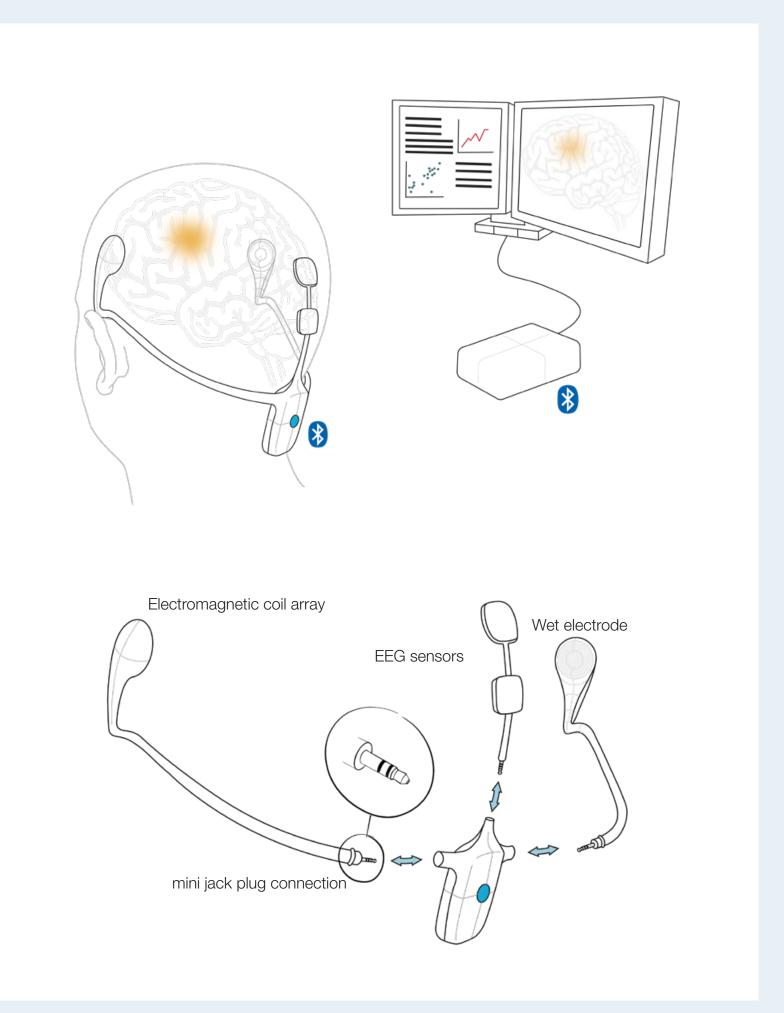






## Deep Brain Stimulation device





# Seisho Designing an inclusive flashlight



This project was an assignment for the Advanced Design Tools subject, therefore it had a big focus on CAD (using SolidWorks) and DFM.

It was divided into two assignments. Firstly, analyse a given flashlight and its parts, materials and processes, as well as running a Life Cycle Analysis. Secondly, design a new light product with a different intent using the flashlight LEDs.

Overall, analysing the flashlight itself and running Lifecycle and SolidWorks analysis for the first time helped me to understand the big picture of design from a manufacturing perspective and the consequences of design for the environment. Moreover, it felt like taking a step beyond developing a concept, as we run CAD analysis to achieve a feasible design.

#### **Individual project**

Middlesex University
Duration: 1 month (December 2020)
Supervisor: Peter Wong

## Seisho flashlight

### 1. Product analysis

We were given a flashlight to analyse its manufacturing, parts and materials.

#### 2. Reverse engineering

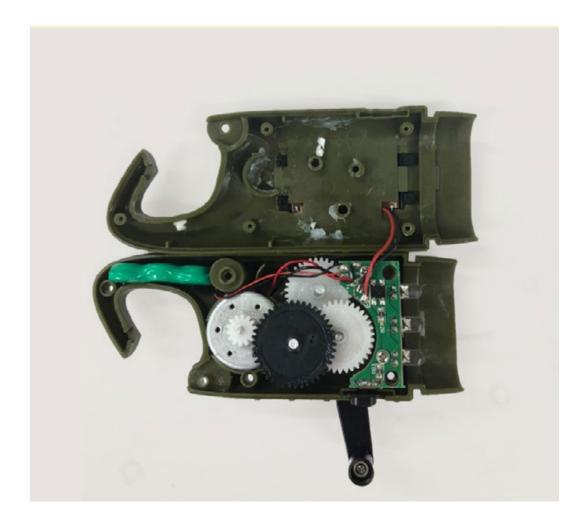
I modelled the flashlight in SolidWork accurately and rendered it in KeyShot. After that, I run a LCA (Life Cycle Analysis) using Granta EduPack.

## 3. Designing a new product: ergonomic flashlight

The briefing was to design a flashlight with a goal. I decided to design an ergonomic flashlight that was easily held so that people with manual disabilities could use it comfortably. As a whole, I was inspired to give something like a flashlight a sensorial quality to it having in mind the feeling of a pebble.

## 4. Design for Injection Moulding

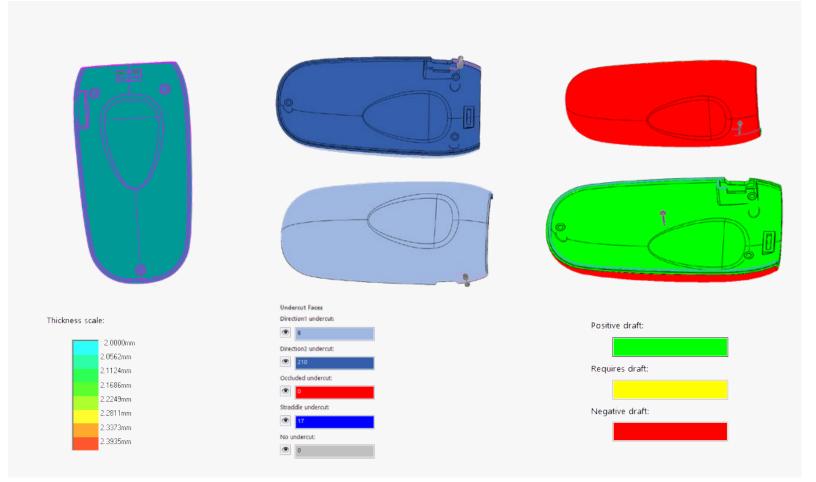
One of the important bits of the project was to design taking into consideration the constraints the process demands. Therefore, I run FEA on SolidWorks to check an even wall thickness, an undercut analysis and the draft angles.











## Seisho flashlight

