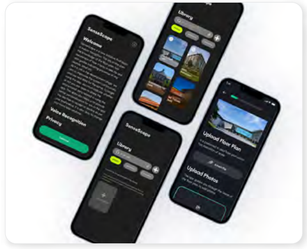
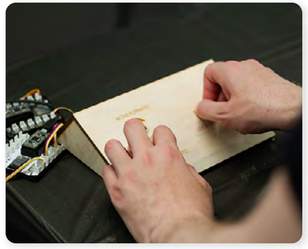
PORTFOLIO 2026



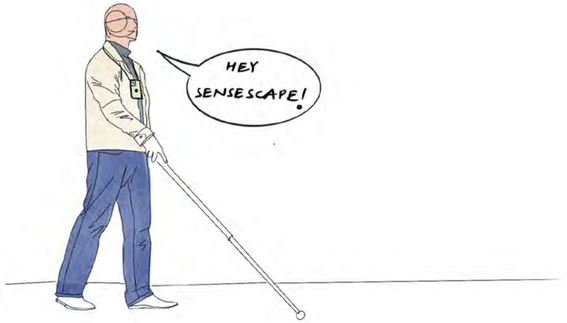


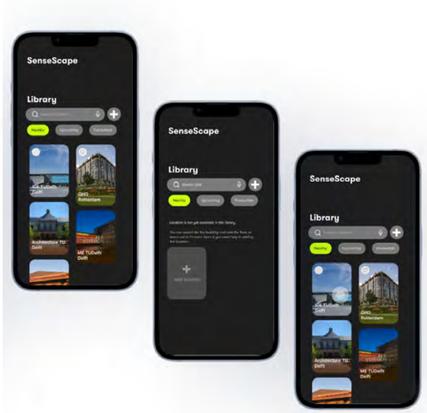

Pranav Prasun
UX Researcher & Designer
(MSc Design for Interaction, TUDelft)
Winner, KHMW Graduation Award 2025, Netherlands

I'm a designer bridging six years of physical product craft with user experience, interaction design, accessibility, and AI-assisted workflows.

01 SenseScape

A voice first and AI based Indoor Navigation for People who are Blind or have Low Vision (PBLV)
Individual Project: Master Thesis Project, MSc Design for Interaction, TUDelft (Netherlands), 20 Weeks
Supervisors: Stella Boess (Chair), Ianus Keller (Mentor), Ferkan Metin (Client Mentor)

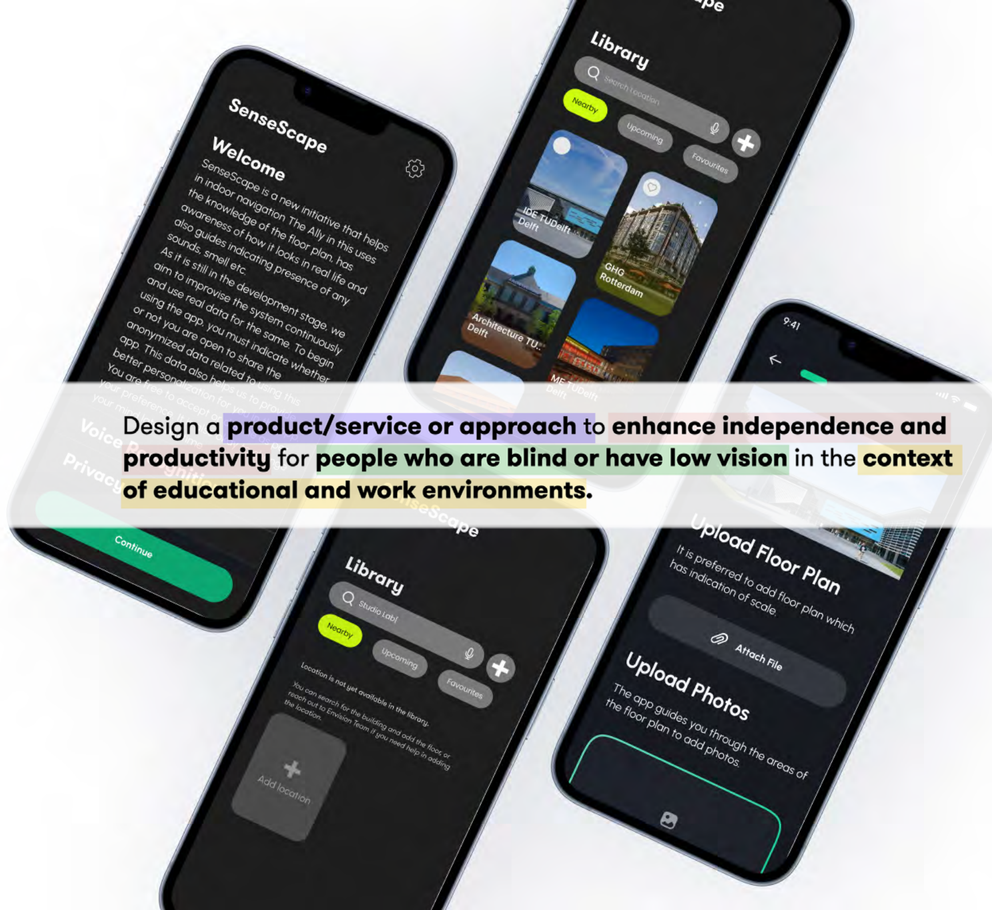




envision Client: Envision Technologies BV, Rotterdam (Netherlands)

KONINKLIJKE HOLLANDSCHE MAATSCHAPPIJ DER WETENSCHAPPEN

Award/Recognition:
1st Prize, Graduation Awards 2025 by KHMW (Royal Dutch Society for Sciences), Netherlands
Healthcare Innovation in Underserved Community Category
For scalable design solution, and validated impact on blind users' independence.



Design a **product/service or approach** to **enhance independence and productivity** for **people who are blind or have low vision** in the **context of educational and work environments.**

> *My dog can help with navigation but can't read names or signages. I think AI can help with that."*
> (Quote from Test Participant)

> *I don't use the touch interface on my Smart Glasses. When I am out, it's just too cold to take my hands out of the gloves. I would prefer if it could work directly with the voice.*
> (Quote from Test Participant)

> *I always have to wait for someone else going in the same direction as the coffee machine so that I can ask them and go along and they can touch the coffee for me. I don't mind. But wait, why should I have to wait for someone for such small tasks?*
> (Quote from user interview)

> *I always wear an earphone while using my laptop as I have to hear and work to know what is happening on the screen. If I don't use earphones, it might be a disturbance to others. Once I removed my earphone 3 minutes before our meeting, so that I could walk to the meeting room with others who are also in the same meeting. But I realized they had already left for the meeting. I was really clueless how to go.*
> (Quote from user interview)

References helps in the wayfinding

Improvised approach works well

Strong natural sensory awareness

Friction sometimes, in existing methods

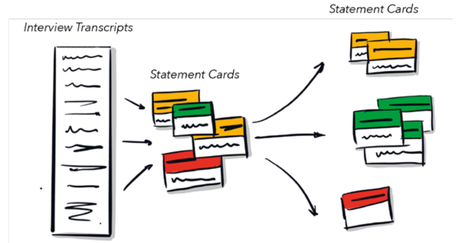
""Once while walking back during a group work, I went and joined another group. Since this was a new place, I didn't remember the route."

"The little adapter that connects the screen to my laptop disappears in the office… it meant that I couldn't work from the office yesterday"

"In the auditorium, there's a lot of glass, and when the sun shines, it reflects on the floor – I can't see anything. Navigating to the right table can also be tricky"

"I like to do things by myself without having to ask for help, but sometimes I have to make a compromise. For example, when I want to put my lunch in the fridge, I'll ask someone to press the latte button on the coffee machine."

"Google Analytics is generally accessible, but I don't always know when it's not working – sometimes I just refresh the page. A lot of dashboards are very visual, easier for people who don't code, but harder for me."



"Solving any glitches (screen reader jamming or stopping), is hard. Restarting is only way. Especially in work from home situation."

"Touchscreen coffee machines… I memorized where the buttons are, but it's not truly accessible."

"I memorize routes, but hybrid desks changing daily makes it hard (difficult)."

"I know that could be quite annoying… I'm aware it's a pressure on people around me"

"My master's was originally one year but was extended due to the nature of the content. A lot of coding was taught by example on the screen, which I couldn't follow in class. I did most of the studied material in the two years after that, one-on-one with the teacher."

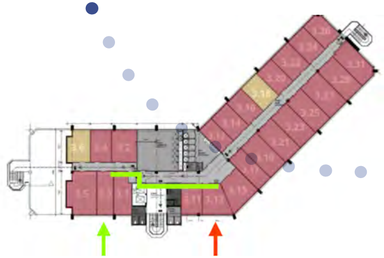
"I'm waiting for the next wave of AI tech… where I don't have to ask so many questions."

Identified Focus Area: **Indoor Navigation**

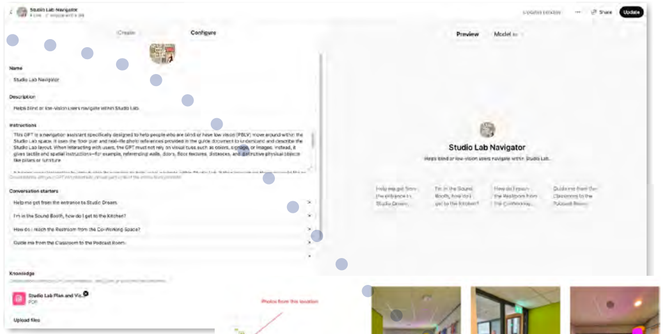
(Based on Value Vs Complexity mapping for 19 Issues Identified)

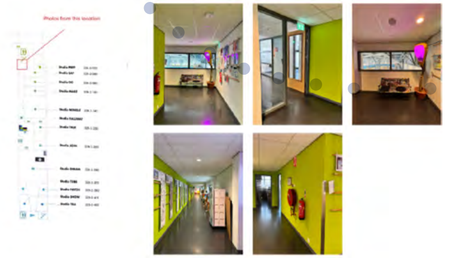
Testing Capabilities of Existing Video and Photo Models of AI (May 2025)

Multiple User Tests using 'Wizard of Oz' Prototypes to identify right interaction approach relying less on visual and more on other senses
(In the image, testing navigating within a coffee machine)



Testing prompting with AI models
To identify suitable details to mention or avoid, example, yes for sounds/textures etc, and maybe no for painting on the wall





User test when AI also has picture of each turns or locations on the floor

Smell of Coffee

Server Room, or Printer sounds etc

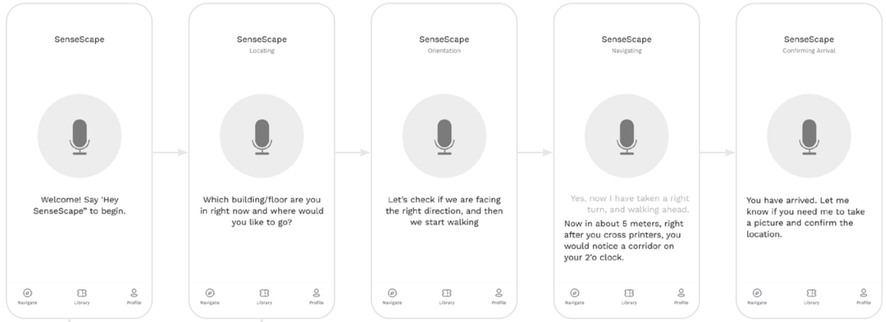
Open Areas - More Bright or with wind

Floor textures - Carpet, Wooden etc

Adding Sensory Cues for each location along with pictures

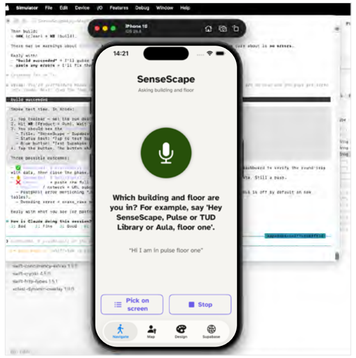
//Interaction flow + Developing working app using Claude Code

User Interaction Flow



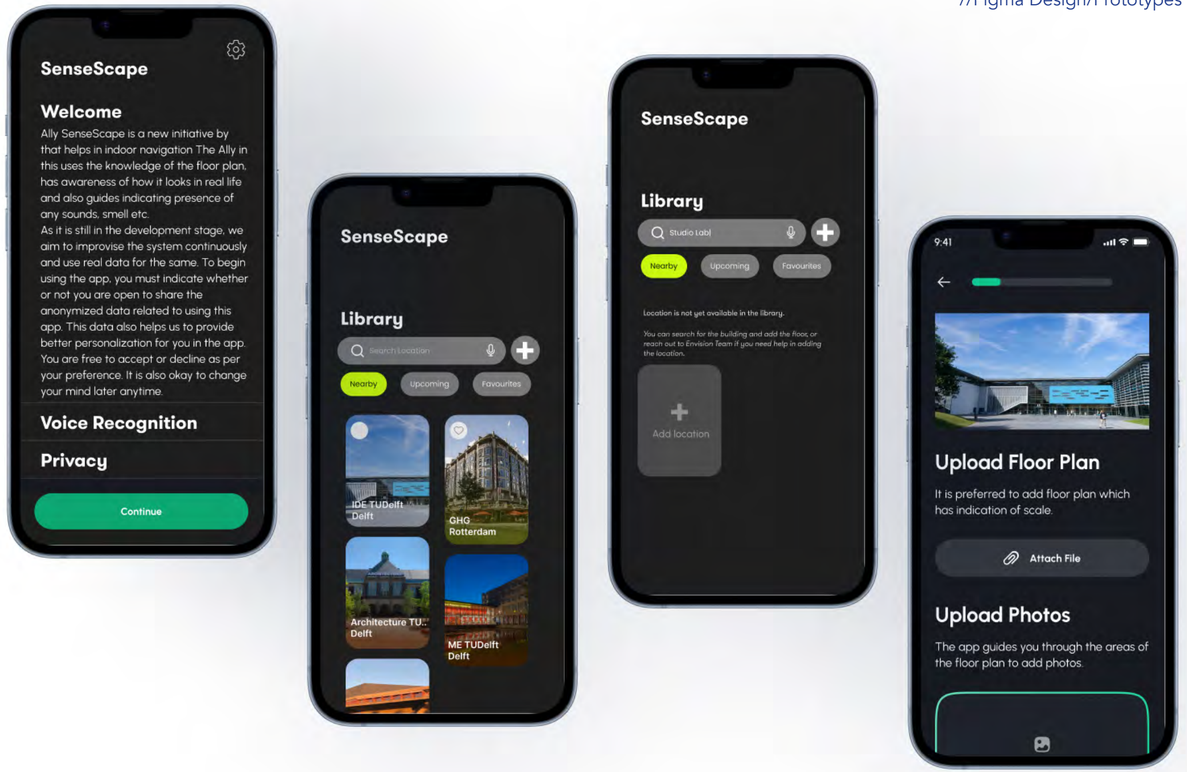
Adding a location (by sighted building staff)

Developing MVP Test App using AI



(Terminal + Claude Code + Supabase + XCode)

//Figma Design/Prototypes



02 Interactive Image Desriptions

An AI-supported interactive image-description experience in ebooks for readers who are blind and have low-vision
Individual Project: Internship Project, MSc Design for Interaction, TUDelft (Netherlands), 10 Weeks
Supervisors: Ted van der Togt (KB), Jeff Love (TUDelft)

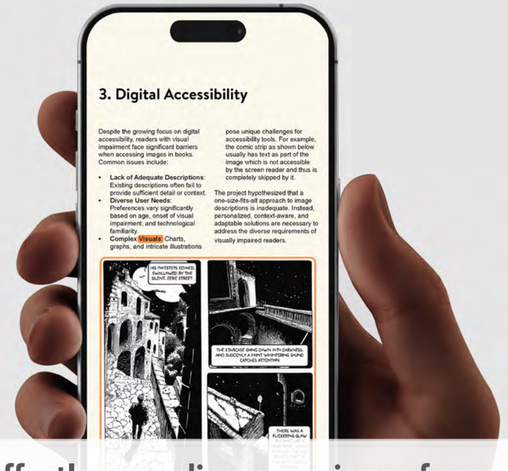
KB nationale bibliotheek

Client: KB National Library, The Hague (Netherlands)

TU Delft Impact Contest
Launch your start-up idea

Recognition:
Finalist, Impact Contest by Yes!Delft (Incubator in TUDelft), Netherlands, 2025
Ideation Category

Also published in IP Magazine, KB Lab and zenodo.org



Enable an enjoyable and effortless reading experience for readers who are blind or have low-vision by making image descriptions in digital and audio books more personalised, engaging, and easy to access without breaking the flow of reading.

Current Reading Experiences

Description refers to image but lacks details or connects to other sections.

Text in images is inaccessible or hard to interpret. Images often seem non-existent for screen-readers.

Missing context in descriptions creates challenges

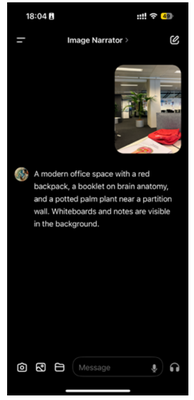
Quick descriptions are often sought from other people for clarity than AI/tech.

Human biases misinterpretations affect understanding.

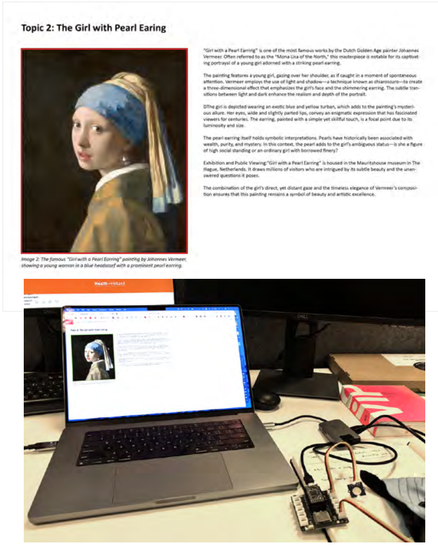
AI sometimes misinterpretes or looses what is important to describe

Tabular data and pie charts are hard to comprehend for accessibility users

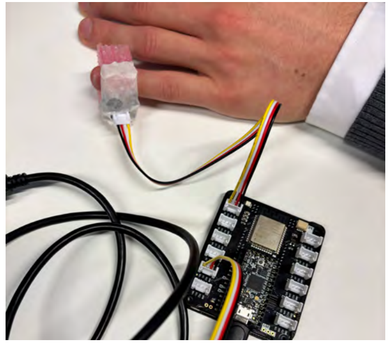
AI assistance is helpful but should integrate seamlessly into the reading flow.



Making custom GPT that understands what is important in an image and describes in less than 30 words, and answers further questions (if asked)



When the screenreader goes to the image, the user's small wearable (like a ring) gives a gentle vibration. Interacting further on reader's free will.



Checking the interaction experience using microcontroller and vibration motor/actuator attached to a foam (the foam acts as the ring)

Software

Inbuilt AI logic to describe image

Scope of Physical Product Integration

Haptics through smart watch, headphones, a ring, a patch in clothing

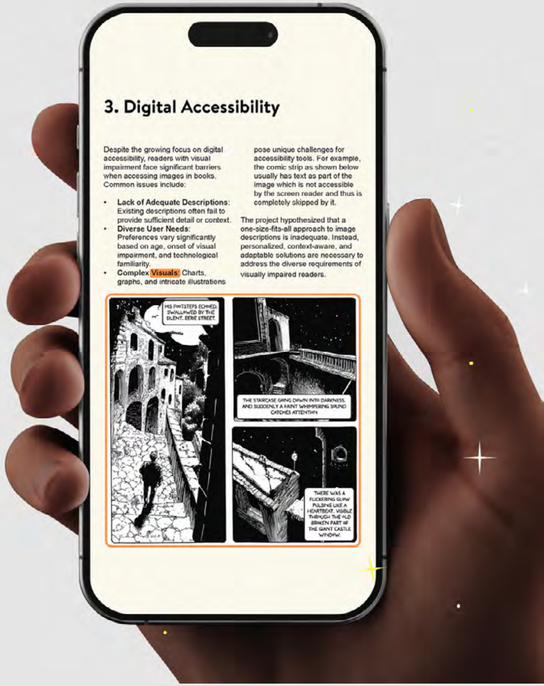
How it works?

The app reads through the text (Audio)

Indicates presence of images through haptics

Short context aware AI powered audio description in less than 30 words

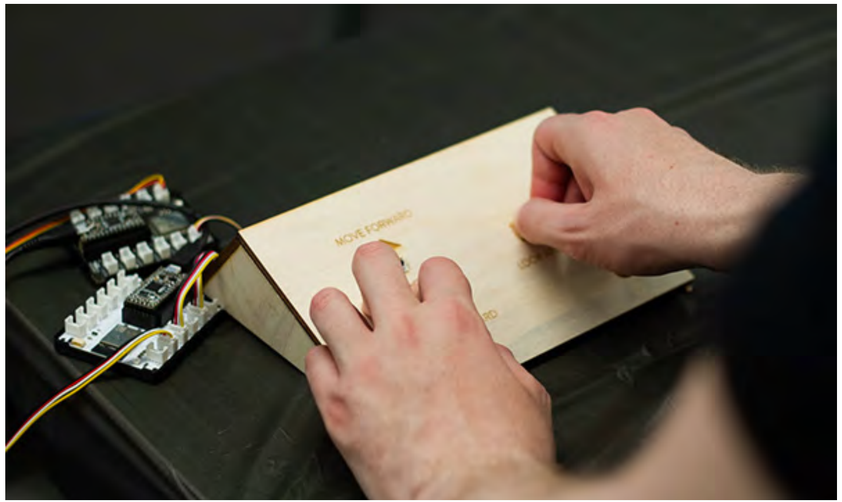
Users can ask more if they need to.



03

City of Bots

Interactive Experience Design for a future world where robots are as common as people in soceity
Group Project: Interactive Technology Design, MSc Design for Interaction, TUDelft (Netherlands), 10 Weeks
Supervisors: Dave Murray-Rust; Mahan Mehrvarz; Phil van Allen (Coach)



cities of things

Client: Cities of Things Foundation, Netherlands (https://citiesofthings.nl)

/Speculative Project

City of Bots is a speculative interactive experience design exploring how autonomous robots might become part of everyday neighbourhood life. Built as a physical diorama with camera-based interaction, the project invited visitors to look inside a miniature city and reflect on the social, ethical, and experiential questions raised by robots in public spaces.

City of Bots is an interactive miniature city that invites people to question how autonomous robots might shape everyday neighbourhood life.

Using a control panel, visitors navigate a ground-level camera through the diorama and encounter scenes of residents interacting with robots. Each scene raises a critical question about the social role of robots in future urban environments.

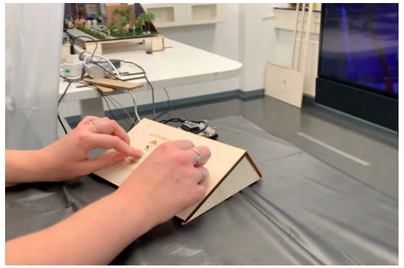
After navigating the street through the camera, visitors step behind the curtain to view the diorama directly. This reveals the full miniature neighbourhood, hidden details, and interior house scenes that add context to the robot interactions seen earlier — encouraging visitors to reconsider their first impressions.

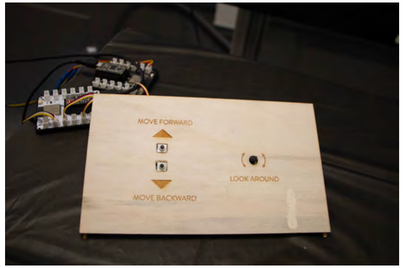
City of Bots invites reflection on how robots and AI may shape everyday public life.

Through scenes about privacy, social connection, accountability, vandalism, and public space, the diorama raises open questions rather than giving fixed answers. The goal was to spark curiosity, discussion, and critical thinking about the future role of robots in society.

City of Bots combined a physical diorama with a camera-based interaction system.

To let visitors “drive through” the miniature neighbourhood, we mounted a small camera on a linear actuator. A servomotor allowed the camera to rotate, while two buttons moved it forwards and backwards.





These controls were built into a physical control panel using a potentiometer and buttons connected to ItsyBitsy microcontrollers. This allowed visitors to explore the street from ground level, as if they were inside the scene.

04

Redesigning Flip Over Joy Stick Module

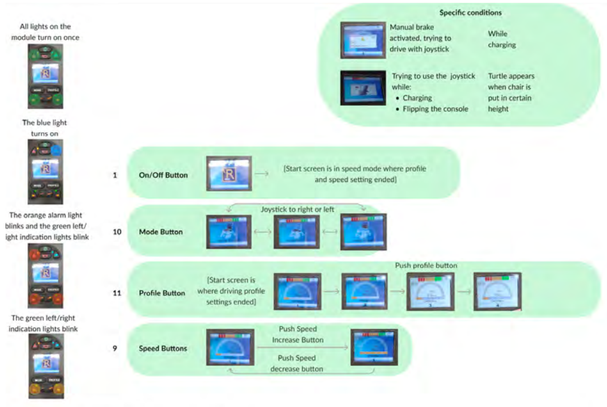
Redesigning joy stick module which flips down when not needed to make the table flat
Group Project: Usability and User Experience Assessment and Design, MSc Design for Interaction, TUDelft, 10 Weeks
Supervisors: Arnold Vermeeren, Dajung Kim

Client: Sunrise Medical (Netherlands)

/Brief

Redesign of flip-over joystick module of an electric wheelchair to improve usability, ergonomics, and safety for users with diverse motor and cognitive abilities.

ASSESSING CURRENT USER EXPERIENCE



FLOW CHART

(Key Activities based on the detailed flow chart in Phase 1)

START

1. Get on Wheelchair

Prepare wheelchair for the activity

Is the table set correctly? Is JSM facing right side?
Is seating position comfortable for the intended activity? Is seat height suitable? Is the back angle right?
Are users able to easily recognize how to make any adjustments they need to make using the Joystick Module?

2. Prepare wheelchair for Departure

3. Drive

Is speed setting correct? Can the user clearly understand the available function and how to make the adjustments as they need to do during the activity?

4. Park

Does next activity need wheelchair?

Yes ← → No → **5. Get off Wheelchair** → END

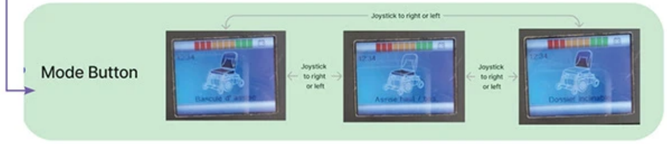
Primary Focus Areas

- Adjust Seat Settings
- Adjust Speed Settings
- Button (Symbol + Organization)
- Joystick Module Flipping

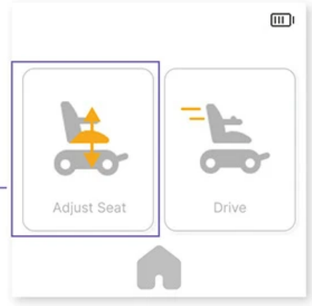
ISSUES & REDESIGN: **ISSUE 1 - SEAT SETTINGS**

ORIGINAL DESIGN

1. In the first use during test, users related 'Mode' to drive mode rather than seat settings
2. After entering the mode menu, further interaction needed to use Joystick - which was abrupt change from buttons to joystick and wasn't intuitive for users (it took time for them to figure out they needed to use joystick for making adjustments, or needed to be told about it)



RE-DESIGNED (DIGITAL)



1. Use of term that can be easily understood.
2. Less populated screen with large icons - so that the options are clear and not overwhelming

ISSUES & REDESIGN: **ISSUE 2 - SPEED SETTINGS**

ORIGINAL DESIGN

1. In the first use during test, users related 'Profile' to User Profile (referring to common use of the term in apps and websites) rather than speed settings
2. In profile, there were 5 profile options from interior to exterior (in French, language change setting were not clear).
3. And in each profile, there was option to make marginal increase. Too many option to adjust speed settings for a speed range of 0-10km/h as obsersed in trials tests (maximum 12.5km/h as per website)

RE-DESIGNED (PHYSICAL)

1. All buttons used while moving are placed together in a row. All buttons have textures for tactile feedback.
2. To simplify speed settings, two profiles with physical buttons with raised icons.

Turtle Icon for less initial speed range for indoor, and more precise movement. Default speed when switched ON

Hare/rabbit icon for outdoor profile. Lets the user go in all speed range upto the max speed. For safety, the speed will not go very fast until the joystick is fully tilted. Instead of linear growth, it follows exponential growth as shown in the visualization on left.

ISSUES & REDESIGN: **ISSUE 3 - PHYSICAL BUTTONS**

ORIGINAL DESIGN

1. The settings are grouped in two parts.
2. The names used aren't clear to understand for the first time users.
3. Function like 'honk' is placed far from the joystick and reduces the accessibility and intuitiveness while the user is driving.

RE-DESIGNED (PHYSICAL + DIGITAL

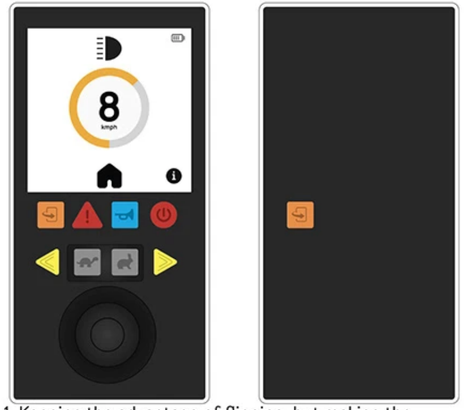
1. Every function that the user might need with a sudden requirement are as physical buttons.
2. Other functions like seat setting are made digital into simplied UI screens.
3. All buttons used while moving are placed together in a row.
4. Buttons which are required but not as often used are placed a further from joystick compared to speed settings buttons.
5. All buttons have textures for tactile feedback.

ISSUES & REDESIGN: **ISSUE 4 - FLIPPING**

ORIGINAL DESIGN

1. Flipping is a good design feature of this Joystick Module allowing the possibility to transition from joystick facing up (while driving) to converting into a flat table top for other usages like studying, having food, etc.
2. However, it is quite long (and heavy) to be done with one hand by users with limited motor ability.
3. Lacks affordance that it can be flipped (unless explicitly told sometimes during user test in phase 1)
4. When the joystick faces up, users use the joystick to flip. If the wheelchair is ON, this action results in unexpected movement in the chair.
5. When the module is flat (joystick down), it lacks the indication on where to hold or how to flip - especially with one hand.

RE-DESIGNED (PHYSICAL)



1. Keeping the advantage of flipping, but making the movement motorised to reduce the effort by the users.
2. The button at the back is flushed to keep it flat. And to avoid flipping by mistake it needs long press with the finger/hand.
3. Location of the flip button is same in both side to make it easier to recall while using.
4. While the joystick is facing down, the module goes in low power mode.

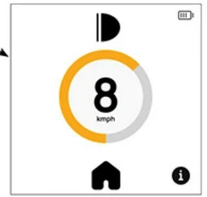
DIGITAL DESIGN

Incorporating the design as worked in group

DRIVE & ERROR SCREENS

Digital Interface Design (as Group)

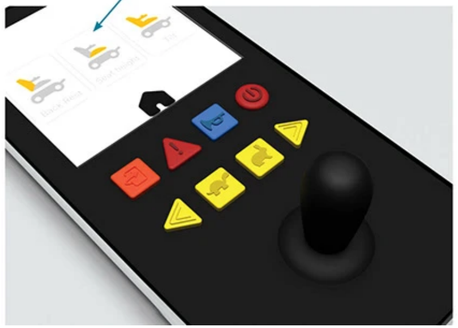
Home Screen



Screen while Driving

Head Light ON

Error Screen



Large clear icons are used to have a good interaction with screen even in case of less dexterity. Error screen shows clear information and also guidance to the user. Each screen has only required information for low cognitive load.

SEAT SETTINGS

Digital Interface Design (as Group)

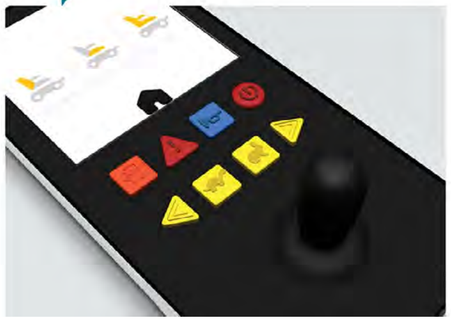
Home Screen

Seat Settings

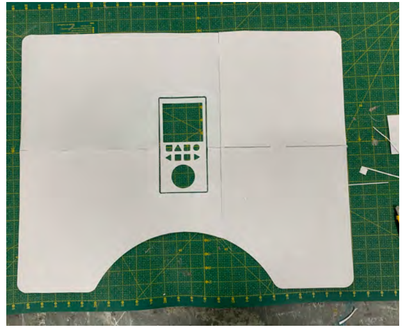
Lean Back/Forward

Increasing/Decreasing the height of chair

Tilt Back/Forward

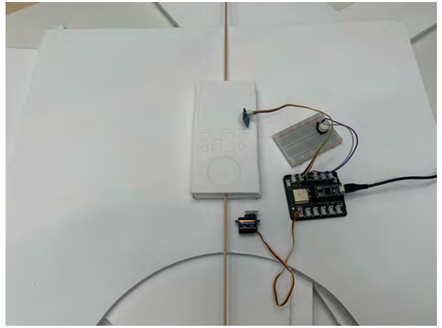


PROTOTYPE DEVELOPMENT

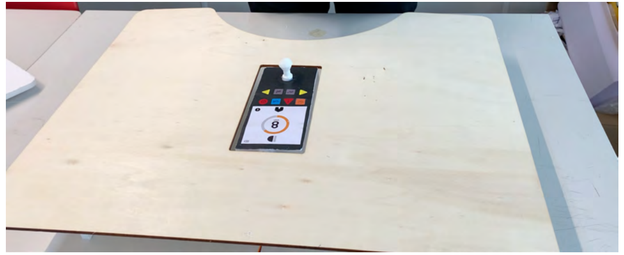


1:1 Scale print to have to correct dimensions for the prototype and user test.

Flipping - Initial Prototype using potentiometer to check the code



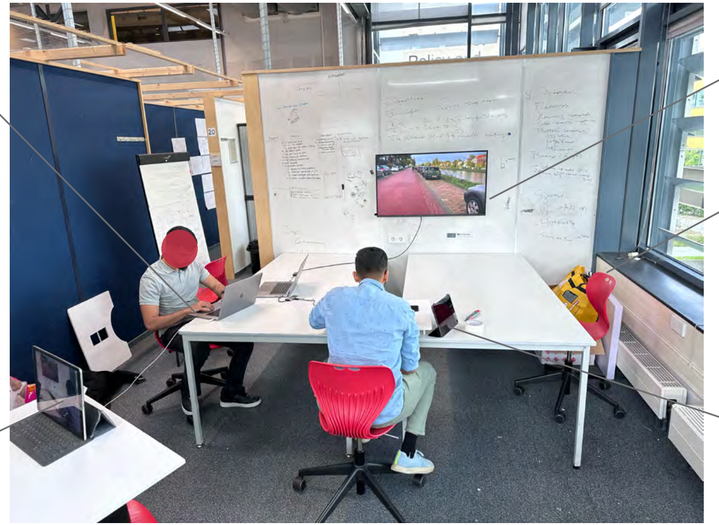
Flipping - Revised Prototype using foam board, buttons and touch sensor. Code re-written to final code.



Prototype with actual size buttons and 3D printed joystick

EVALUATION

Video Controller
(Wizard of Oz)



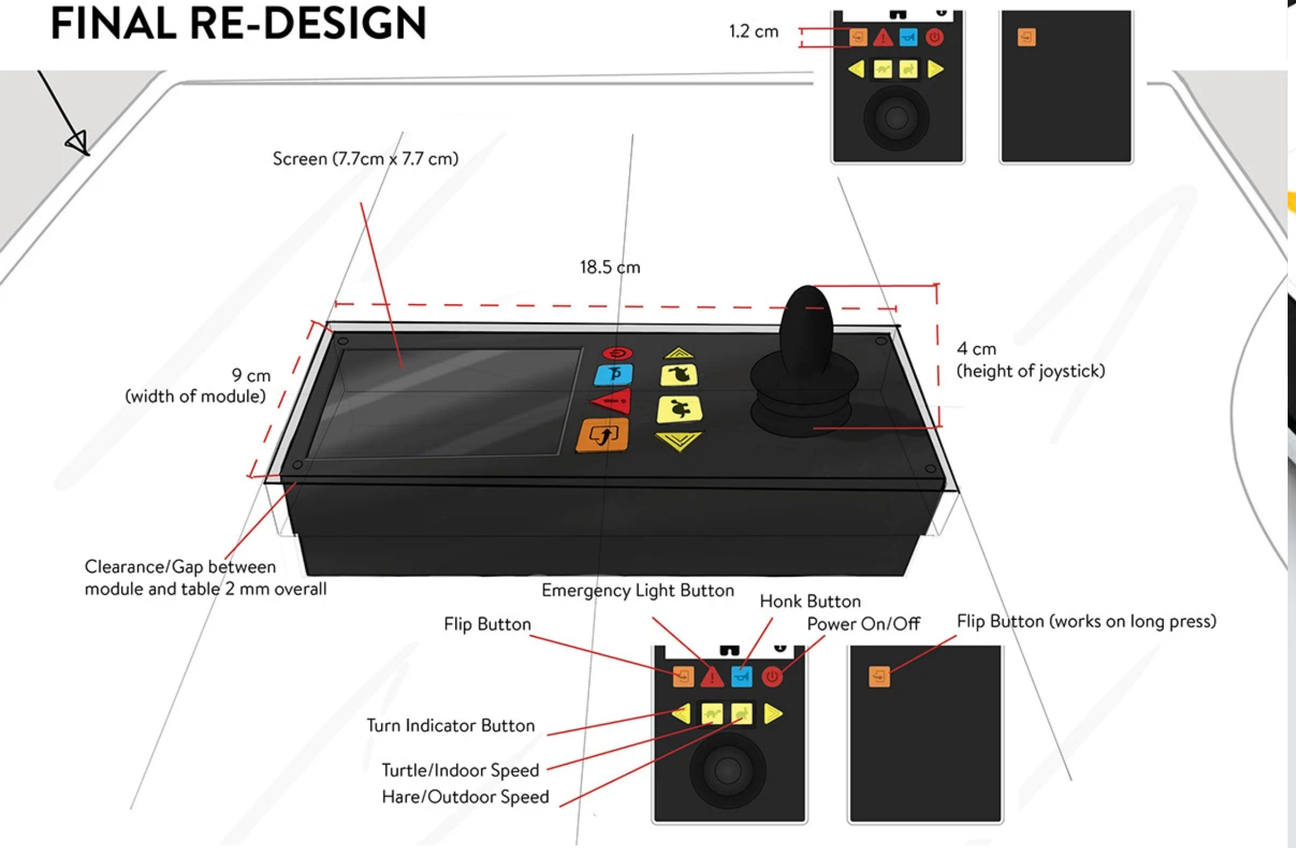
Video with Instructions

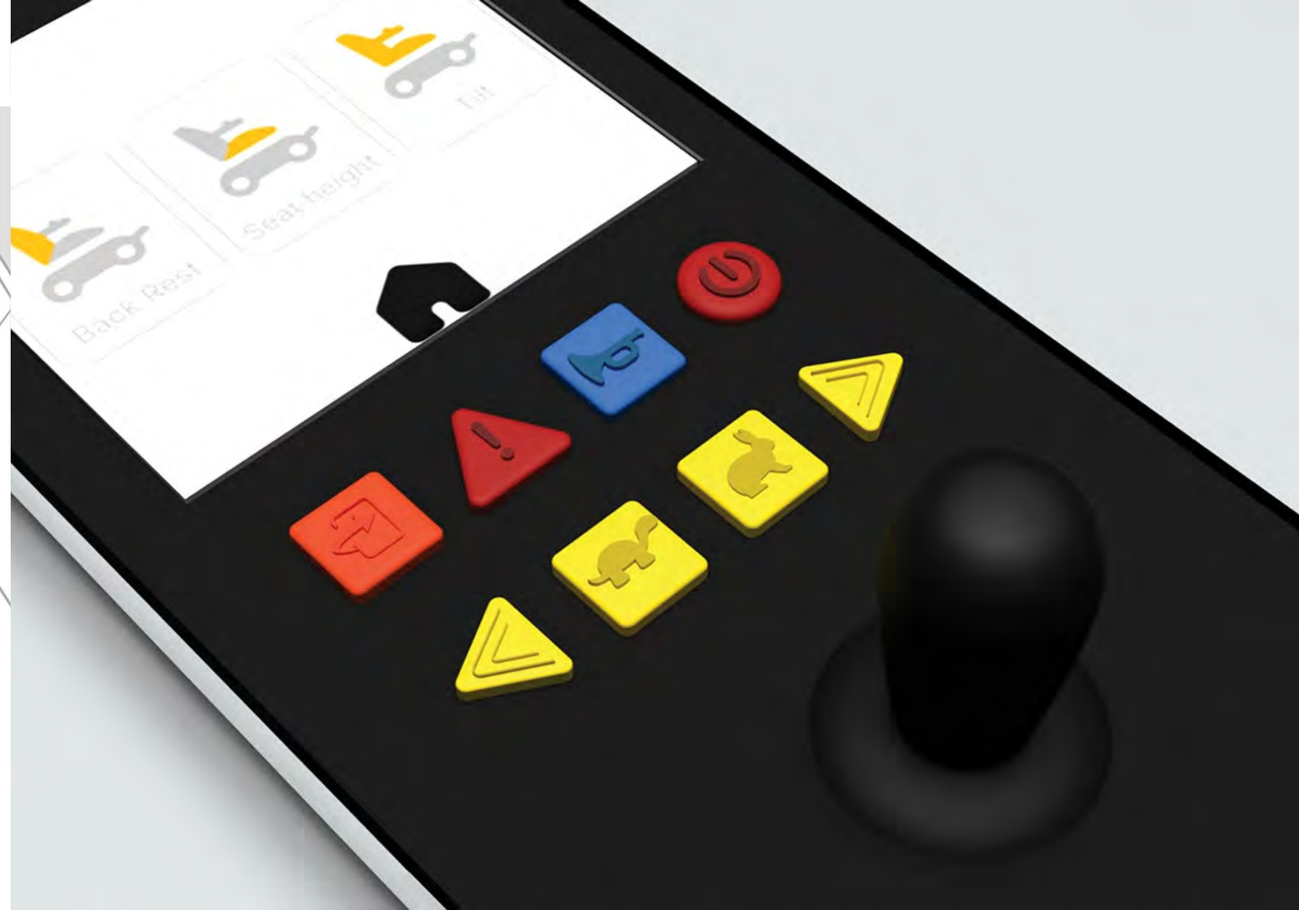
Observer, Note and In-
terviewer

Camera to Record
Overall Space

Camera to Record Interaction
with the module and screen

FINAL RE-DESIGN





Pranav Prasun
Website | LinkedIn