

# L.O.U. Layers of Understanding

# Project Description

**What if our home had a personality and would react to how we walk through it?**

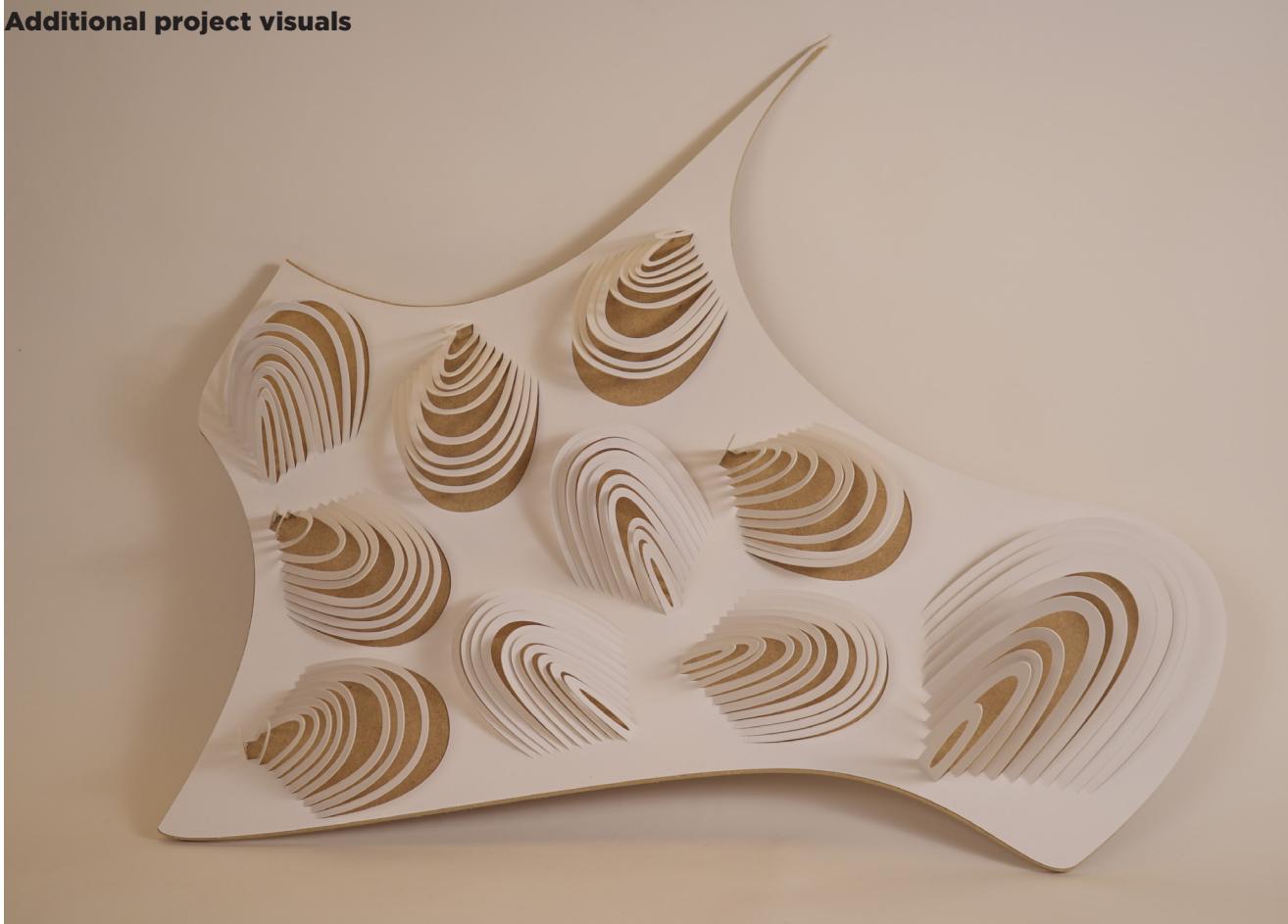
**LOU** is a textured floor surface that unfolds in different shapes depending on how people approach it. You can walk over it, but only if it allows you. You can pet/caress its layers, if you are aware of how you move around it. It can block your path and make you redo your steps if you startle it.

**LOU** was developed as research on skin properties and how to use touch to connect ourselves to our surroundings. It has 6 modules (1 in the center and 5 around it) that fit each other in a puzzle-like way and react in unison to how people approach from multiple sides. The center piece is the only one not automated, being meant to be freely played with; if reached. LOU has 3 responsive states: while in idle mode, it moves continuously up and down; as if breathing. If someone approaches it too fast, it gets tense, bristling its layers upward. If the presence approaches it slowly, though; it sets its layers down, allowing people to touch it and get to its center or cross it.

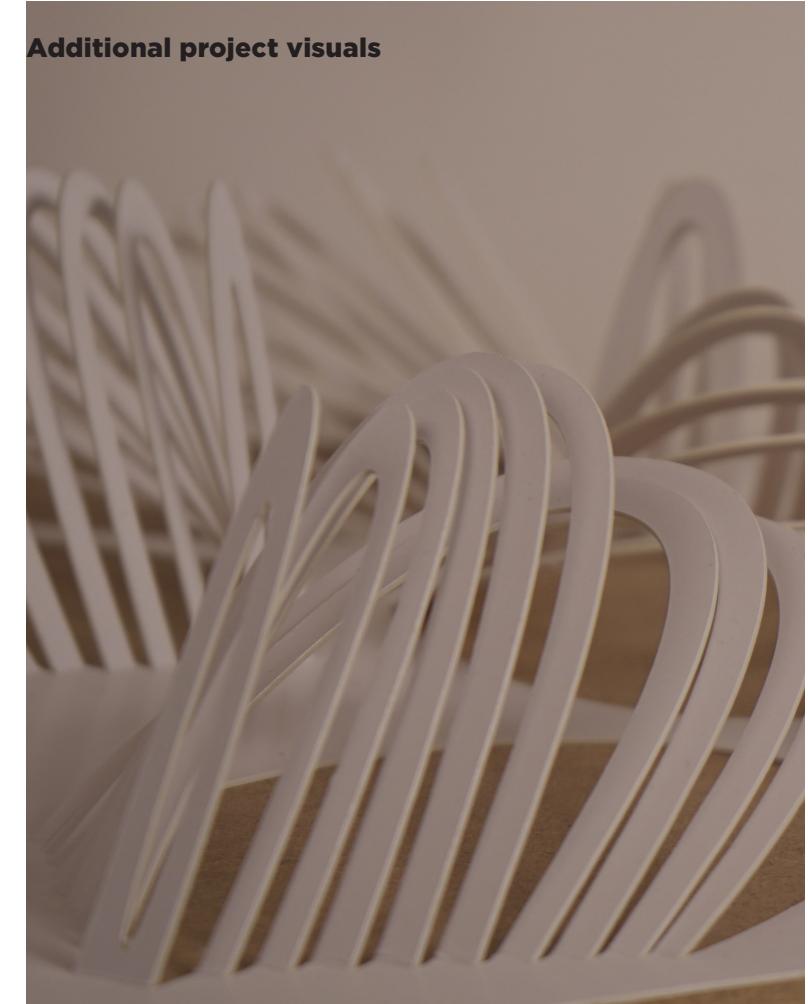
Project visual portrait



**Additional project visuals**



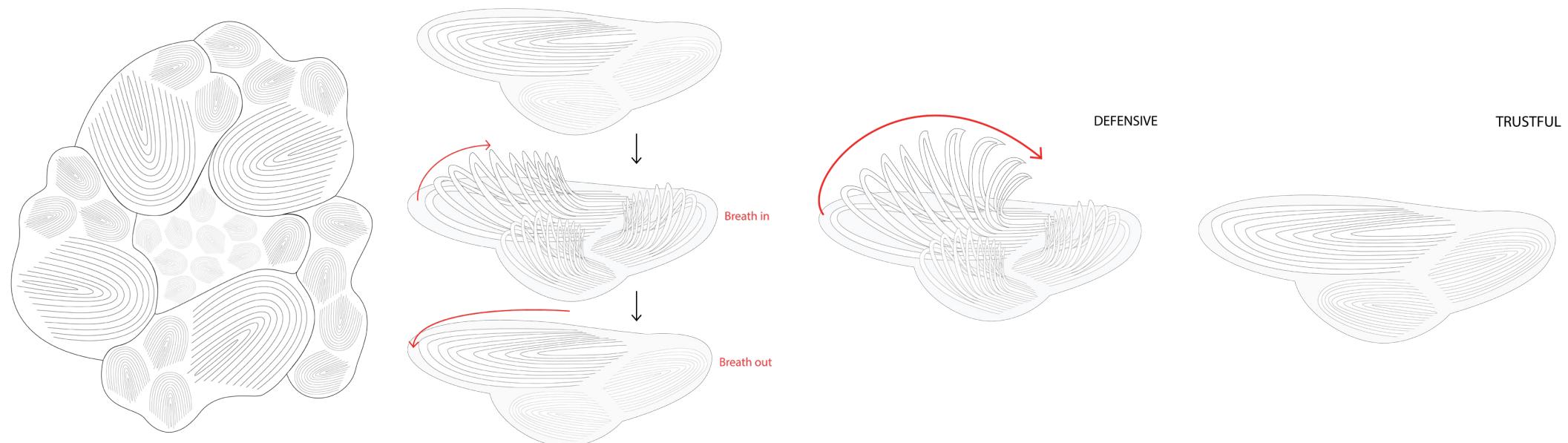
**Additional project visuals**



# User Journey

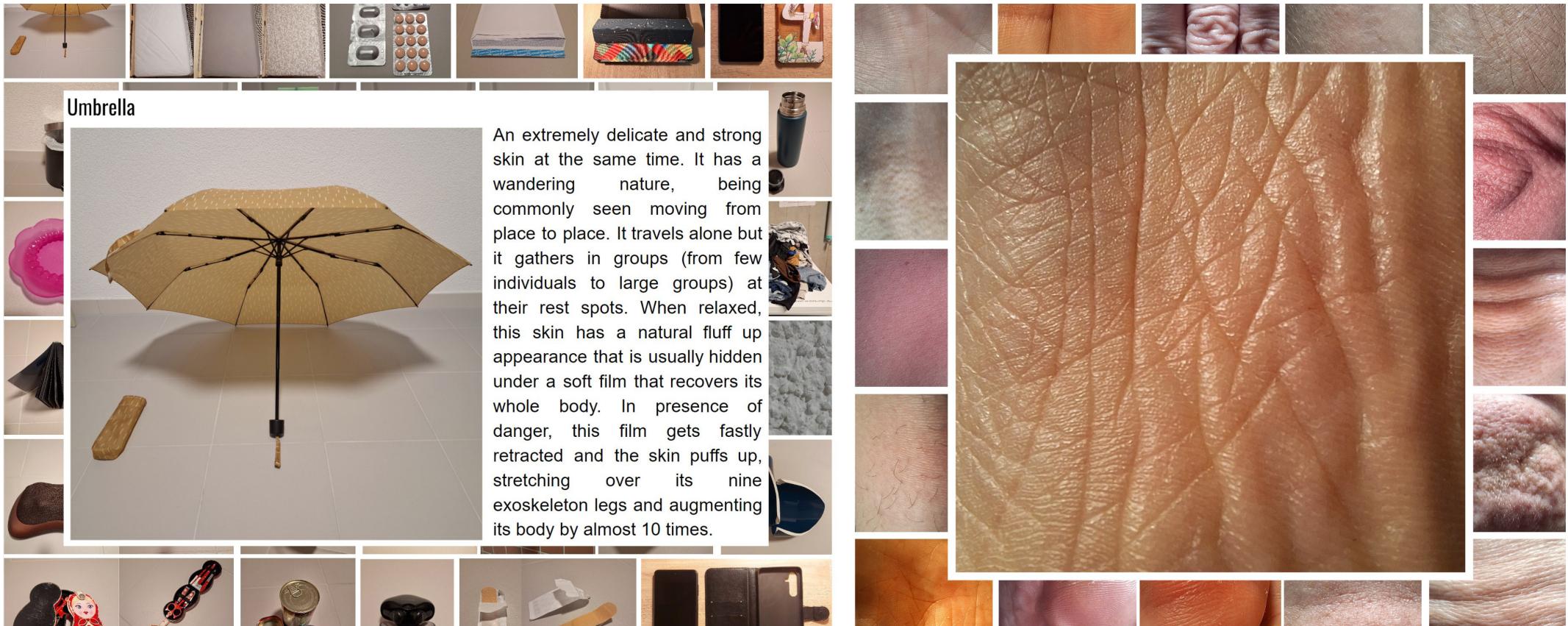
«Approach it. Walk over it. Sit with it. Let it get to know you.”

**Upon first encountering the Responsive Rug, users are drawn in by its subtle presence—a surface that ripples as breathing. Its fibers respond warmly to slow, deliberate movements, inviting them to sit, touch, and experience its texture. Rushing causes the Rug to stiffen momentarily, teaching users to move mindfully. Over time, it becomes a central element in their spaces, fostering moments of connection and stillness. Guests are naturally drawn to its interactive surface, sharing tactile experiences that enhance gatherings. As the Rug becomes part of daily life, it subtly transforms how users engage with their environments, encouraging a slower, more intentional way of being.**



# Field observations

The first observations were focused on understanding how a skin can be identified and what could or could not be considered a skin. That led to a series of photographs and the description of different skin subspecies, which helped build an understanding on what kind of gestures, actions, interactions and relations could be found within them. A skin mapping was also performed, trying to identify the diversity of skin patterns and behaviors within the same continuous human surface. From there, the first sketchings and testing began; developing different re-combinations of the previously collected data, trying to think of new meaningful connections.

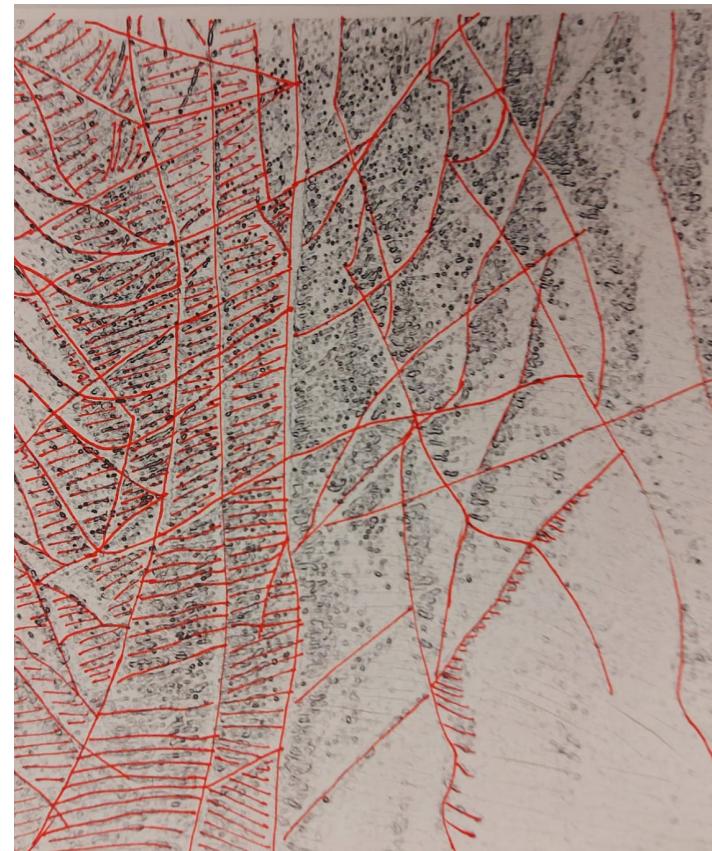


# Visual and Material Moodboard



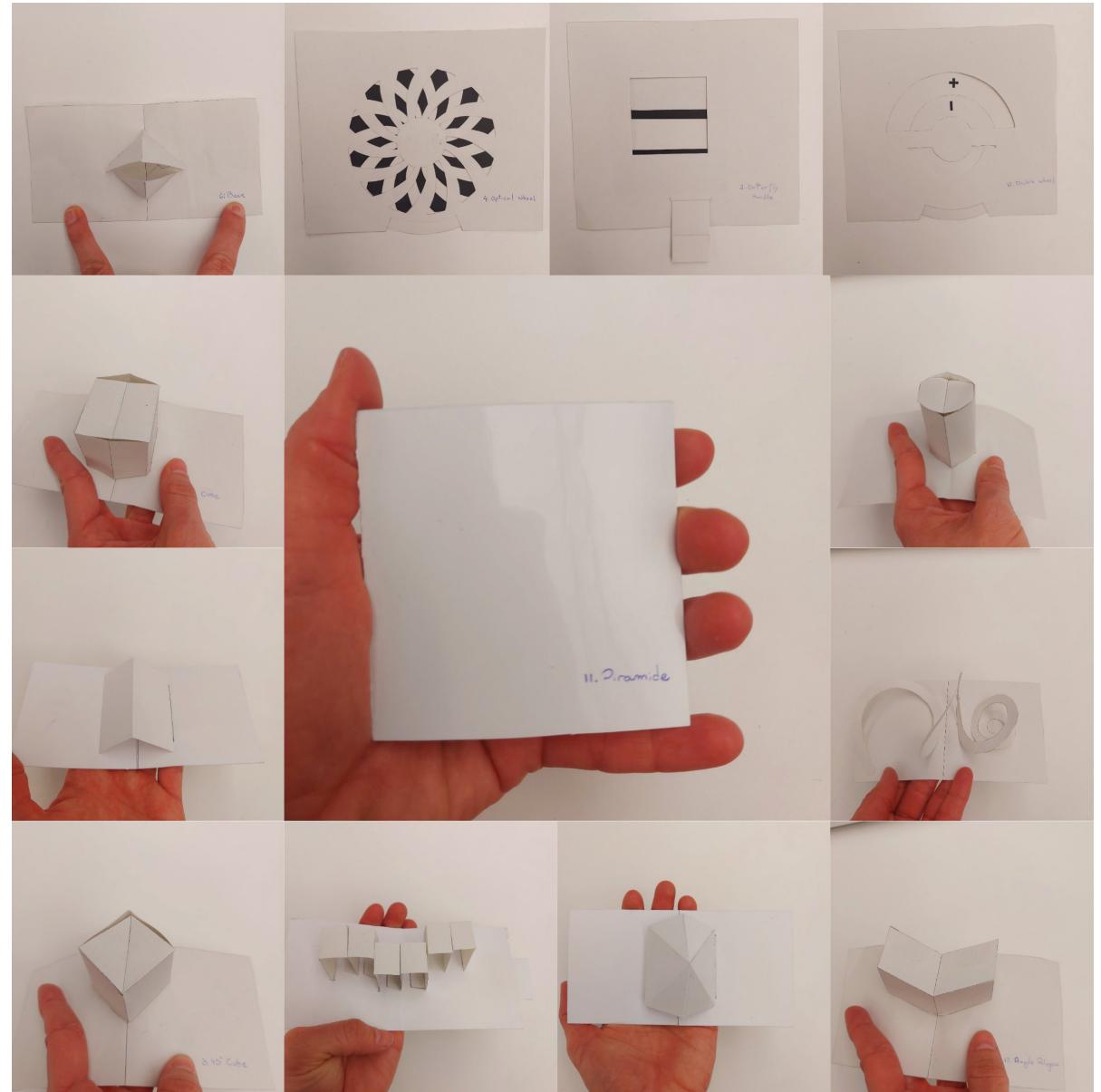
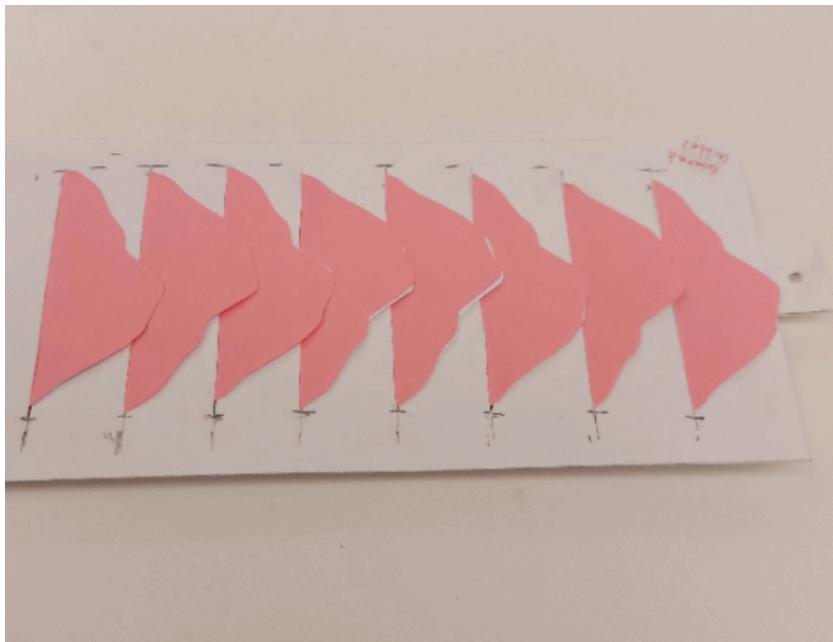
# Shape research

The shape research was divided into two main subjects: textures and gestures. First, following the results obtained from the experiments with Skin mapping, the images were printed and cuted out using the photoographs own textures as guidance. That led to the identification of the patterns and rapport contained into the skin surface and also to the understanding of how to reproduce them to obtain specific desired touches.



# Shape research

After that, the intention was to play with the textured flat surfaces, trying to understand what kind of movements could enhance their properties and help the robot better communicate/interact with people. Considering the robot floor-dwelling nature, one of the most pressing problems was researching ways of getting it to grow from a flat surface into a 3D structure and back to flat, in order to allow passage and also protect it from people stepping on it.



# Paper Prototypes



# User Tests

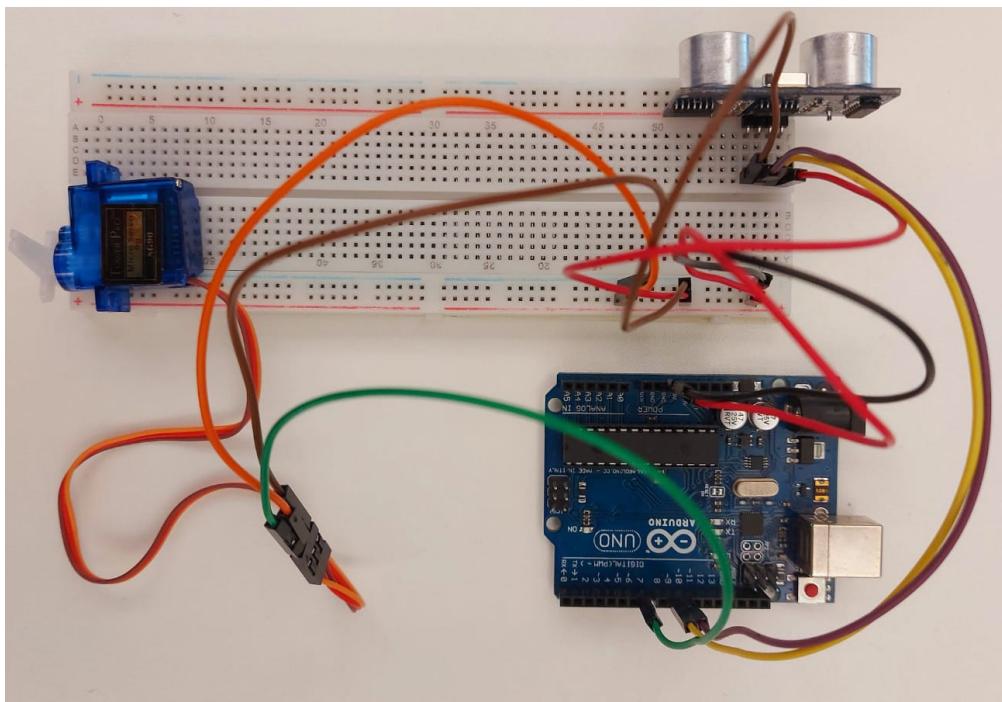
The user test were performed analizing 3 main questions:

1. How people interact with L.O.U.? What movements/gestures they do?
2. How they react/interact to L.O.U. movement?
3. How different sizes modules are perceived?

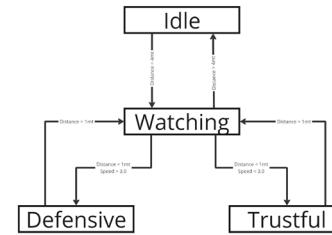


# Electronics

## Electronic schematic

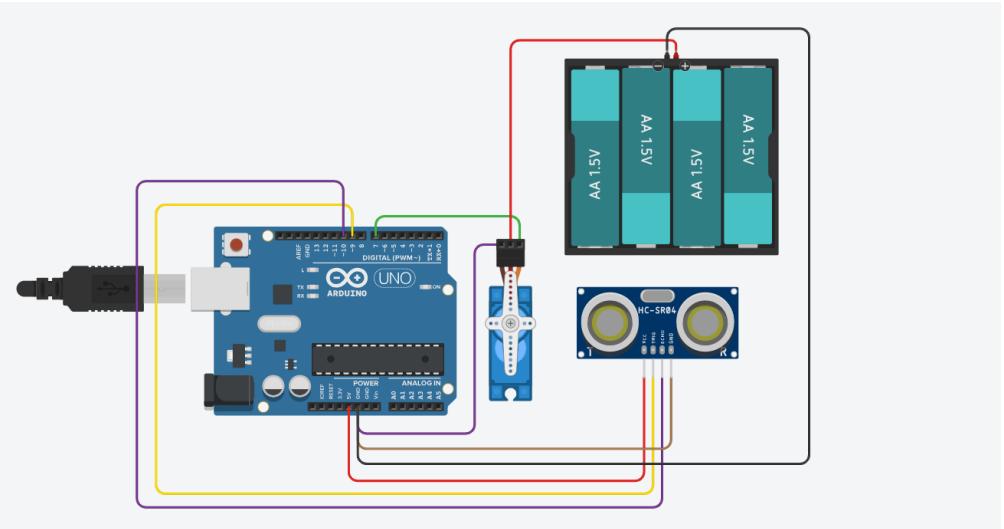


## State Machine Logic



STATES	SCENARIOS	EVENTS
Idle	It is alone	Distance > 4mt
Watching	Someone appeared	1mt < Distance < 4mt
Defensive	Someone approached too fast	Distance < 1mt Speed > 3.0
Trustful	Someone approached slowly	Distance < 1mt Speed < 1.0

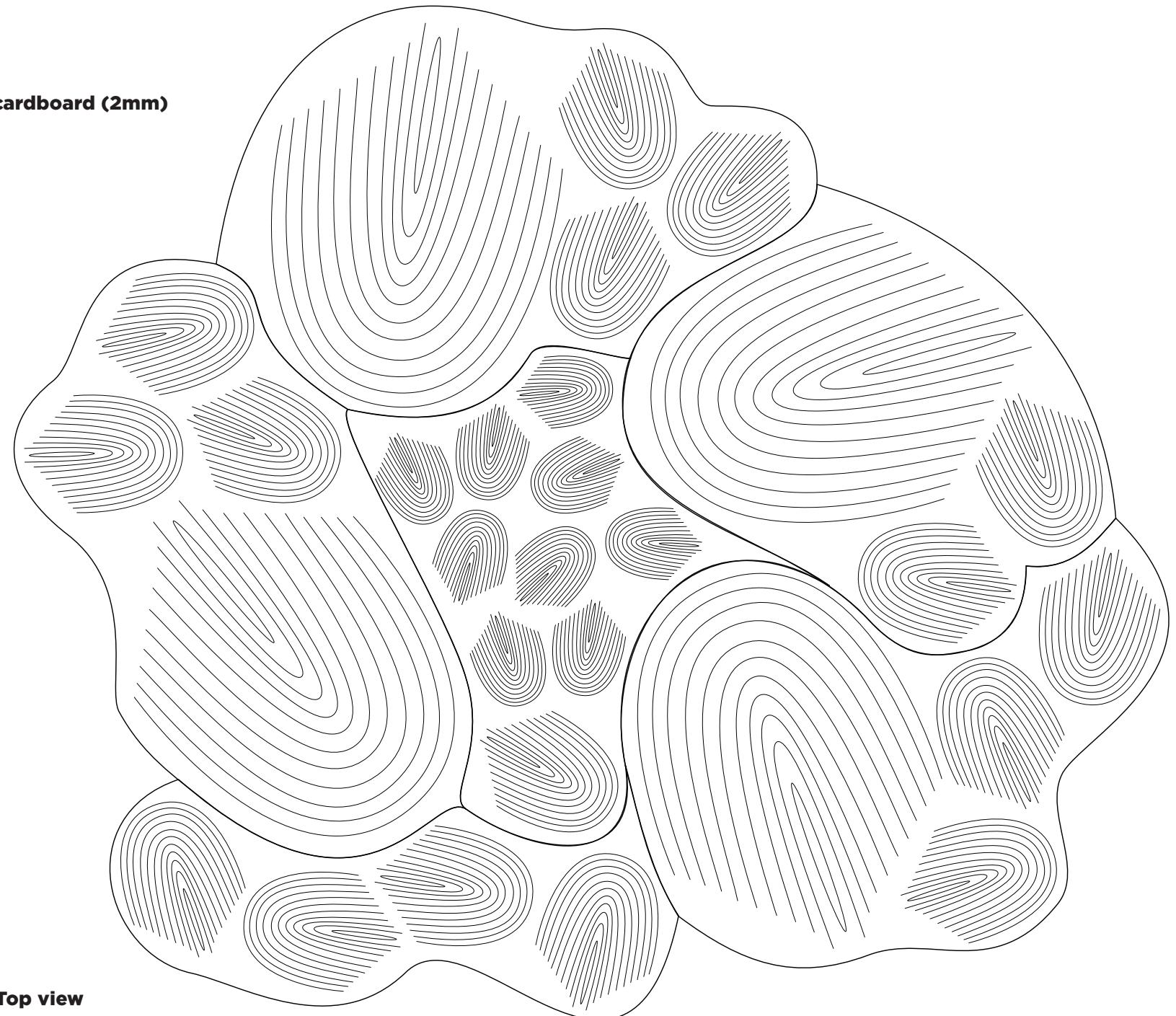
## Fritzing schematic



# Plan Drawings

Materials: MDF (10mm), Bristol cardboard (2mm)

Scale: 1:10 in mm



Top view