JOURNEYS IN DESIGN EMOTIONS

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PERCEIVING THE REALITY OF CARE

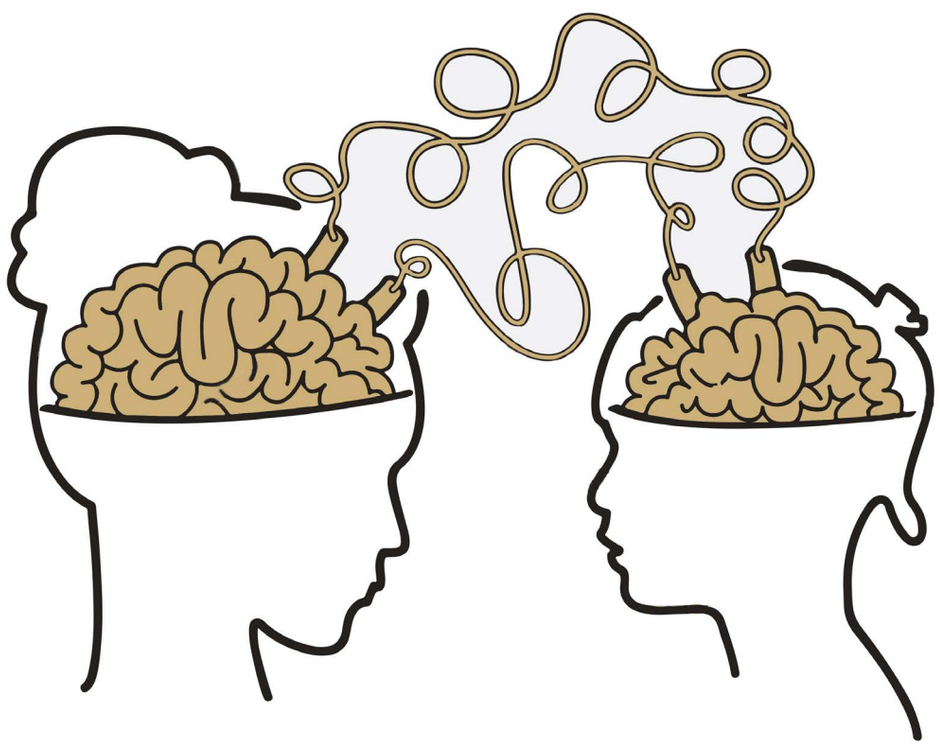


Fig. 1

RESEARCH AND DESIGN OF **DA-LAL JABER & AKSHAT SARSWAT**

The course "Design Objects" provided us with an opportunity to create an object as a living entity. Our lectures looked at many designs that carried the characteristics of a human being. We were inspired by the work of Weng Xinyu and her project Angry lamp. The lamp had the essence of a needy person who required constant care and attention. We wanted to capture some of the Xinyu's project's conceptual features in our design while building a stronger connection between the user and the object.

We believe that allowing caregivers to understand their influence on their children is crucial to a personal and social extent. Children will gain by being raised in a healthier and more stable way. Parents and caregivers will understand their roles better on how to deliver that responsibility. Finally, the society will be composed of well mannered and civilized, and modernized communities.

What is responsibility? and what does it mean to be responsible for something?. Responsibility is the moral obligation we feel to act properly towards somethings. Many of our responsibility is born with us. An individual's first responsibility in life is themselves. Furthermore, when technologies emerged and became a part of our identities, we became responsible for them too.

While all responsibilities in one's life can be vital, the responsibility of raising a child is the most crucial. The responsibility of caregiving is often misunderstood and underestimated by almost all societies. The majority of parents and caregivers teach their kids behavioral patterns and habits that they do not implement in themselves. Therefore, children end up rebelling and that can result in long-term behavioral issues.

The problem of lack of awareness caregivers have on performing this responsibility well was our starting point for this project. We felt that we needed to educate parents about the source of behavior their children bear.

After intensive research and some personal experience reflections, we discovered that children's most efficient learning tool is imitation. According to Andrew Meltzoff from the University of Washington, "Babies naturally do as we do, not as we say. And what they see influence their behavior even after long intervals." (Meltzoff, 1999). Therefore, we concluded that Children are sensitive in the sense that they will imitate any behavior that the parents portray, irrespective of whether it's good or bad.

We started the idea-generating phase and went on for weeks. Our ideas varied in contexts and forms, leading us to our final concept. What if there was a way to perceive how kids mirror their parent's behavior? And how deeply affected they are, in a short-term context?. We explored this concept while deepening our understanding of its purpose.

As we developed our idea, we were interested in viewing our aim come to life. We believe that through the parents and caregivers using our device, children will be benefited and served as a community.

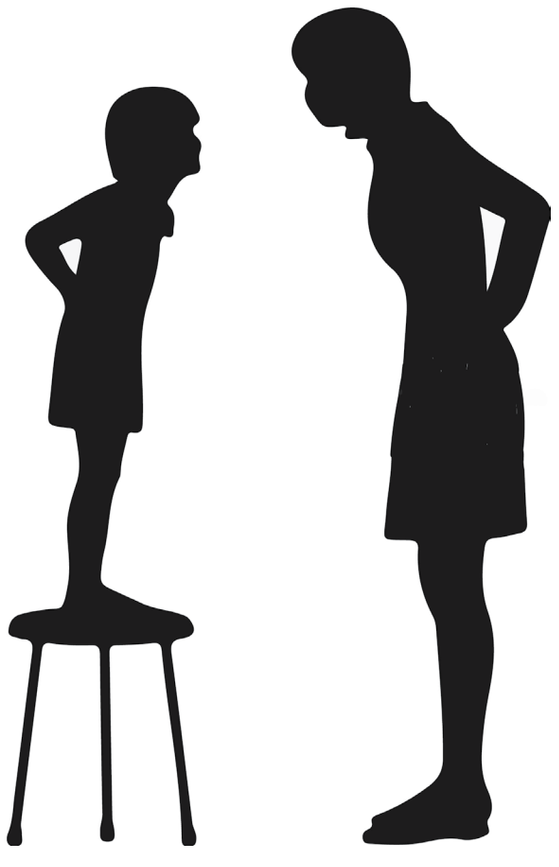


Fig. 2

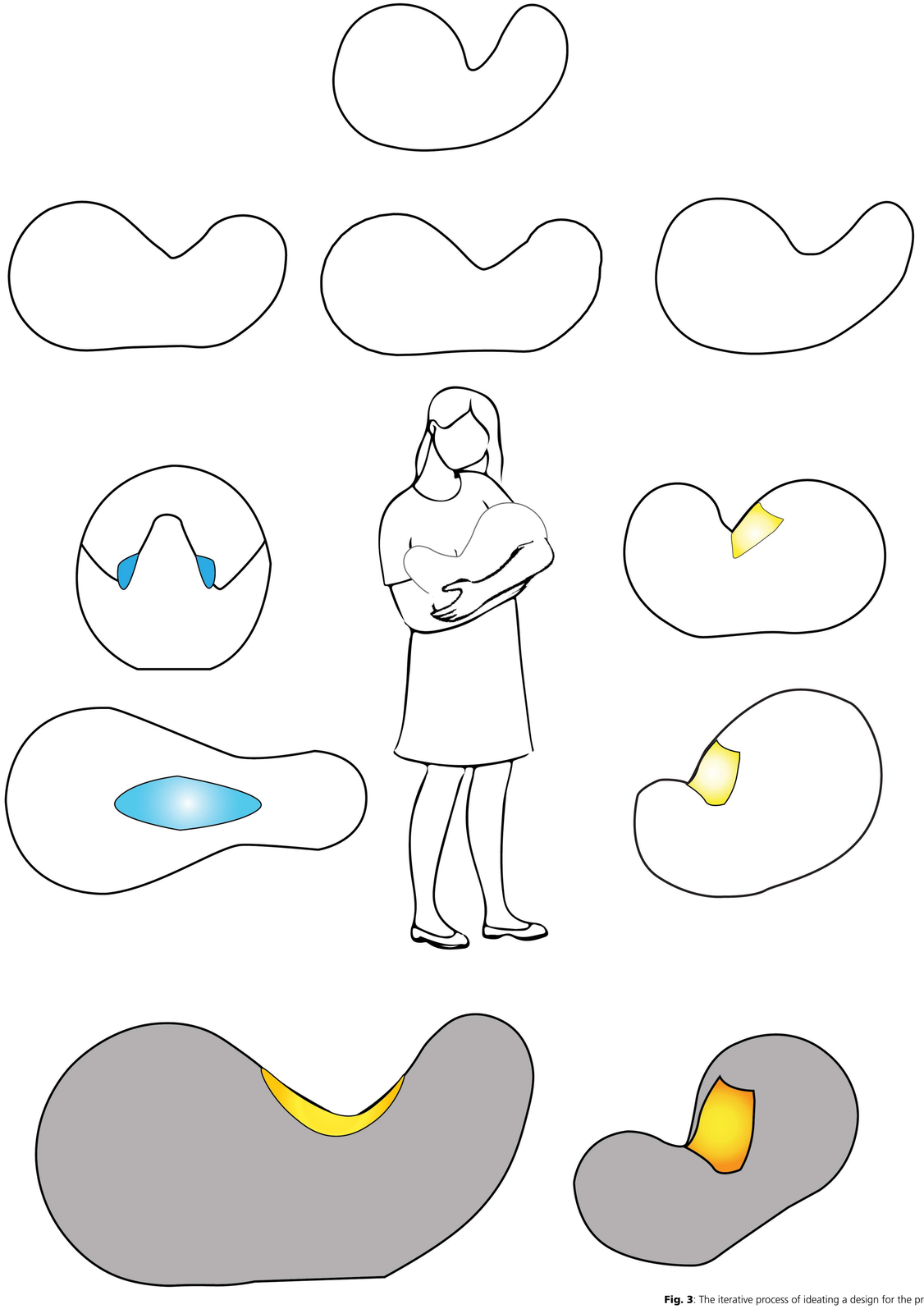


Fig. 3: The iterative process of ideating a design for the product.

DESIGN RESEARCH

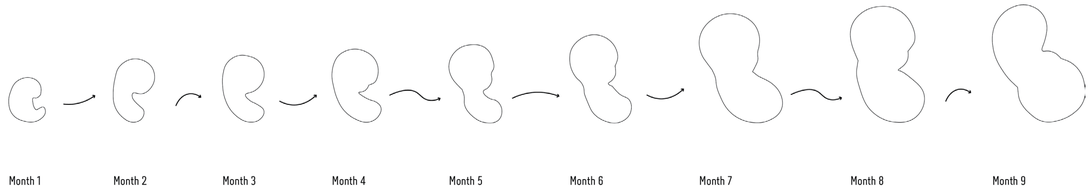
A PRODUCT IS DESIGNED TO POPULATE OUR FUTURE LIFE AND CONTRIBUTE TO FRAME THE SOCIO/CULTURAL SYSTEMS IN WHICH WE LIVE.

When we began the process of visualizing the concept of our device we are aware of one main thing. The shape of our object communicates our idea before any textual communication does. Therefore we were challenged to find a form that delivers a message of nurturing and care for our target audiences.

Understanding the needs of our users, which consisted of parents and any caregivers in general, was key in finding an ideal design. Given that our concept was regarding fostering children, we thought of creating a design that corresponded to that aspect. We have chosen to follow the shape of an early-stage fetus. We felt that shape naturally carries an element of care and nurture due to its size and meaning in life. The emotional value of a fetus can support the overall objective of the device. After loads of research on fetuses, we decided to mimic a three-month-old fetus (fig. 5). The reasons behind our choice are, ergonomically, the third month adjusts better around the arms of the users, and in terms of formation, the third month resembles a newborn more than the other months.

We experimented with the fetus form till we settled on a shape that fulfills our contextual and functional requirements (fig. 3). Also, the light-emitting was positioned in the central intentionally. That region is where the heart of a newborn lies, and emitting the light there represents the source of a human's emotional expressions.

Fig. 4



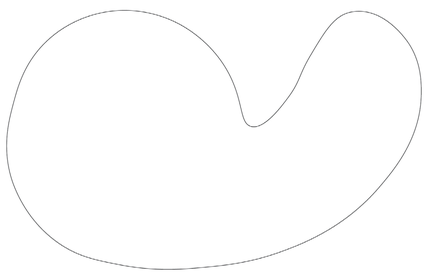


Fig. 5

THINGS THAT BEHAVE?

HOW CAN A PRODUCT ACT? HOW DOES IT DO IT AND IN WHAT SPATIAL AND TEMPORAL CONTEXT?

Our object's behavior is the core element of this project. To develop a dynamic of behaviors for our object, we needed to study human behavior first.

the behavior of our device mirrors the user's behavior. This enables them to perceive their action's effects on their children. The element of consistent attention-seeking is done to reflect the reality of the responsibility of a child. While we are aware that nurturing and care are done in multiple ways, we decided to focus on the vocal aspect of nurturing a child. The device picks up on the tone of the user's voice and categorizes it in numerical values. Thus, according to intervals, the user's behavior will be considered neutral, calm, angry, and happy, and the light will emit accordingly (fig. 8). The use of colors to convey emotions is our main source of connection between the user and the device. Psychologically, the colors will impose certain emotions on the users allowing them to grasp the concept.

User experience of our device is implemented through the use of various colors and through the shape of the object, the fetus. The meaningful experience gained from the object will build a powerful bond between the user and the device, and also delivers a significant message about care.

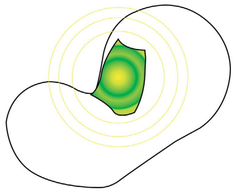
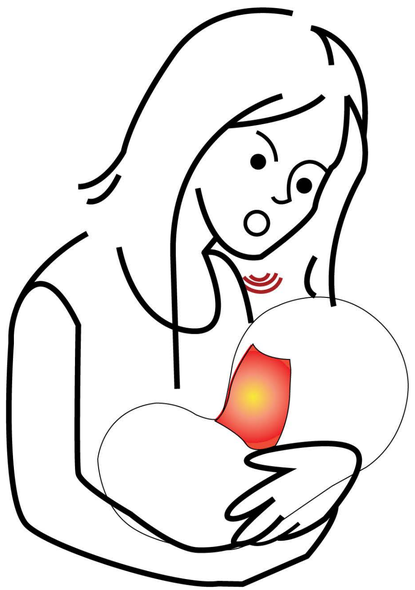


Fig. 6



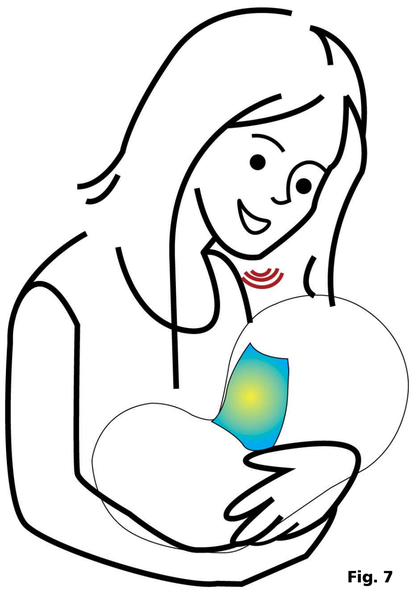


Fig. 7

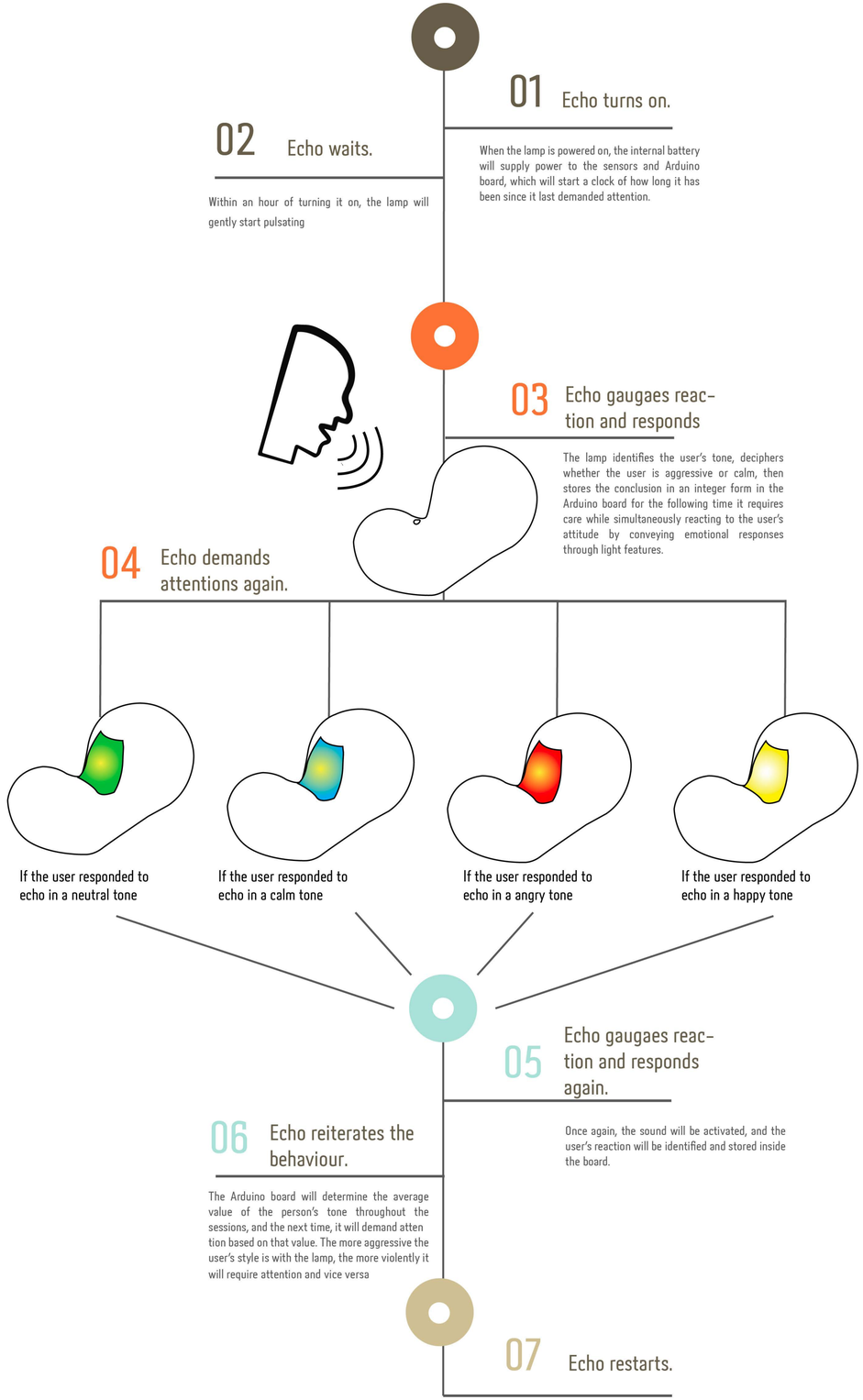
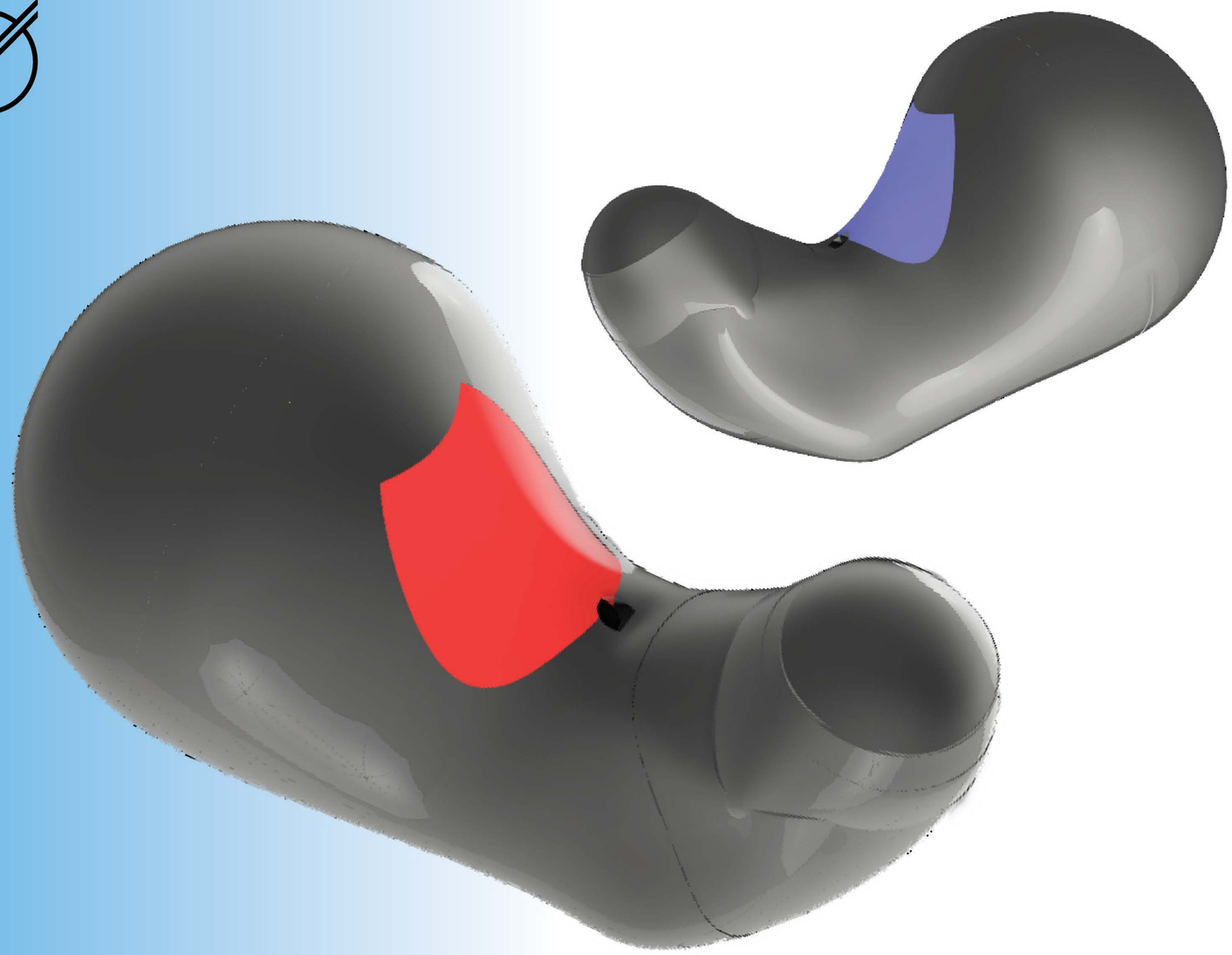


Fig. 8: A flowchart conveying the behavior and functionality of the product.

ECHO

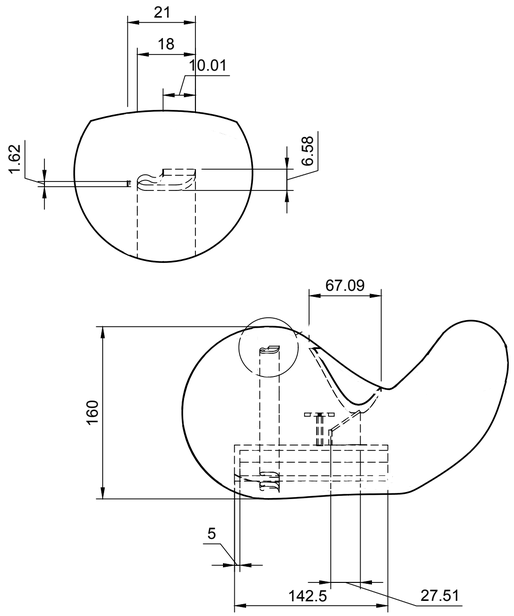
Reach a brand new level of sympathy



PRODUCT DEVELOPMENT

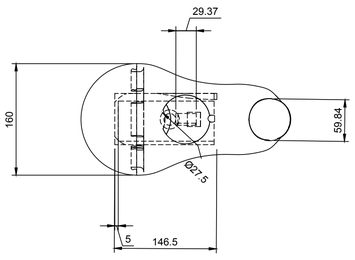
A JOURNEY FROM CONCEPT TO PROTOTYPE, THROUGH ERGONOMIC EXPLORATIONS AND MATERIAL ANALYSIS

Front

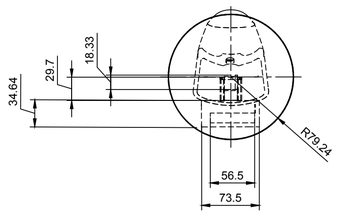


The fabrication of our device was an incredible learning experience. We begin by constructing the head and the tail of the fetus. Then, we started to examine the electronic elements we needed to include inside the design. After studying each part individually, we were able to create stabilizers to prevent them from moving. Our modeling process begins digitally then it was translated physically through 3D printing. We used PLA for most of our elements (fig. 11). To print the object, we had to slice it into many pieces and start the printing separately. We then joined all the parts together, while attempting to perfect it by sanding and applying plaster. For the finishing, we sprayed the device with reflective paint to act as chrome. The use of chrome was meant to support the overall idea by allowing the user to see their reflection bouncing back from the object. The reflection symbolizes the concept of mirroring, which was the main message we intended to deliver.

Top



Side



Section

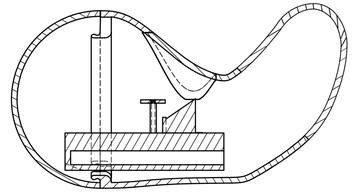


Fig. 9

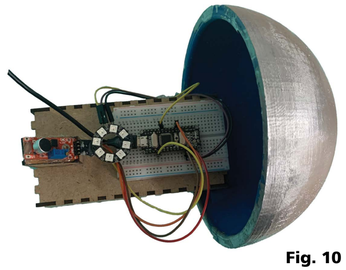


Fig. 10

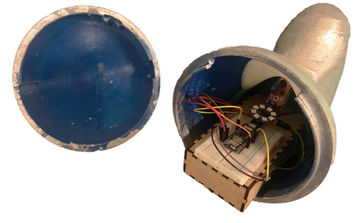


Fig. 11

	Materials
01 Microphone Holder	PLA Filament
02 Sound sensor	-
03 LED light holder	PLA Filament
04 NeoPixel ring LED	-
05 Powerbank	-
06 Power Bank Holder	PLA Filament
07 Snapfit Positive	PLA Filament
08 SnapfitNegative	PLA Filament
09 Outer Shell	PLA Filament
10 Top Cover	PLA Filament
11 Tail	PLA Filament

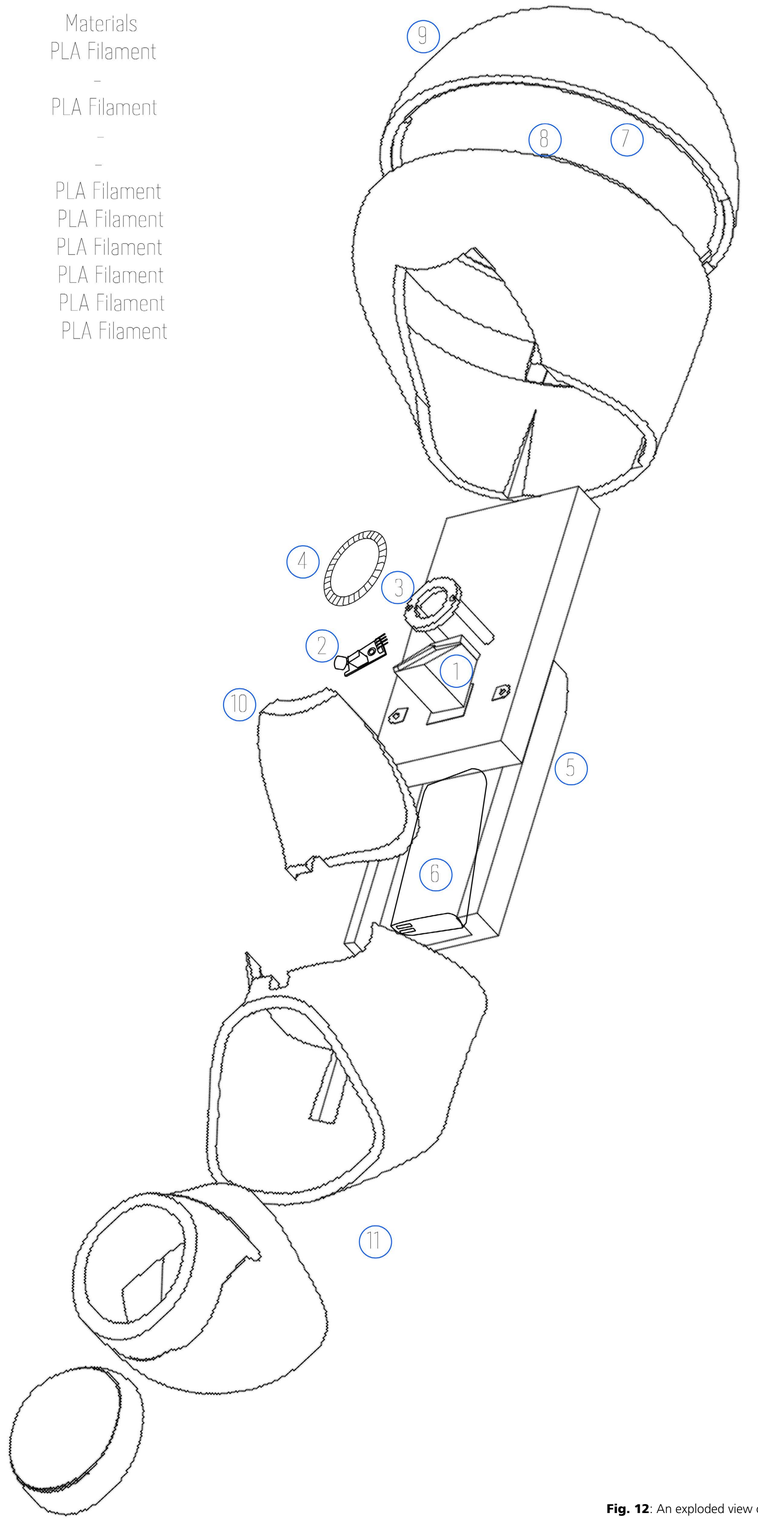


Fig. 12: An exploded view of the device.

CODING

CODES DEFINE HOW OBJECTS ACT AND TRANSLATE THE DESIGNED INTERACTION MODEL INTO A SET OF PHYSICAL ACTIONS

We started coding by examining the RGB sensor. Programing the LED light was our first step, The pulsating light in specific. Then, we estimated the numerical values for recording volume in the sound sensor. To calculate such values, we need to identify the average volume of a person first. Finally, we link both sensors to work simultaneously. Each range or set of values produces a color of light. The process was highly iterative, yet we managed to refine it with so much fulfillment.

```
#include <FastLED.h>

FASTLED_USING_NAMESPACE

// FastLED "100-lines-of-code" demo reel, showing just a few
// of the kinds of animation patterns you can quickly and easily
// compose using FastLED.
//
// This example also shows one easy way to define multiple
// animations patterns and have them automatically rotate.
//
// -Mark Kriegsman, December 2014

#if defined(FASTLED_VERSION) && (FASTLED_VERSION < 3001000)
#warning "Requires FastLED 3.1 or later; check github for latest code."
#endif

#define DATA_PIN    7
//#define CLK_PIN   4
#define LED_TYPE    WS2812B
#define COLOR_ORDER GRB
#define NUM_LEDS    8
CRGB leds[NUM_LEDS];

#define BRIGHTNESS          96
#define FRAMES_PER_SECOND  120
int brightness = 0;
int cycle = 0;
int total =0;
int average;

void setup() {
  delay(3000); // 3 second delay for recovery
  FastLED.addLeds<LED_TYPE,DATA_PIN,COLOR_ORDER>(leds, NUM_LEDS).setCorrection(TypicalLEDStrip);
  FastLED.setBrightness(BRIGHTNESS);
  Serial.begin(9600);

  delay(60000);
}

void loop() {

  // asking for attention
  for (int i = 0; i < NUM_LEDS; i++)

  {
    leds[i] = CHSV(0, 0, 255);
    FastLED.show();
  }
   int j = analogRead(A0);
   // put your main code here, to run repeatedly:
   //Serial.println(analogRead(A0));
```

```
 // Serial.print("more");
  total = total + j;


//wait
//Serial.println(total);
delay(200);



average = total /cycle;
//Serial.println("average:");
//Serial.println(average);

if(cycle >= 47){
  Serial.println("break");
  Serial.println(average);
  for(int i = 0; i<=10; i++){
  heartbeat(color());
  }
  delay(10000);
  cycle = 0;

}
cycle++;
Serial.println(cycle);
}

int color(){
  if(total/32 >= 551 && total/32 <558){
  //green();
    return 85;
}
if(total<551){
//  cyan();
  return 127;
}
if(total/32 >558 && total/32 < 565){
  //yellow();
  return 42;
}
if(total/32 > 565){
//  red();
  return 0;
}

total = 0;

}
void heartbeat(int h){

  for (int i = 0; i < NUM_LEDS; i++)
  {
    leds[i] = CHSV(h, 255, 255);
  }

  for ( int i = 0; i < 128; i = i + 3)
  {

    FastLED.setBrightness(i);
    FastLED.show();
    delay(10);
  }

  delay(50);

  for ( int i = 120; i > 90; i--)
  {

    FastLED.setBrightness(i);
    FastLED.show();
    delay(10);
  }

  delay(50);
  for ( int i = 90; i < 128; i++)
  {

    FastLED.setBrightness(i);
    FastLED.show();
    delay(10);
  }

  delay(50);

  for ( int i = 128; i > 0; i--)
  {

    FastLED.setBrightness(i);
    FastLED.show();
    delay(10);
  }

}
void white_heart(int h){

  for (int i = 0; i < NUM_LEDS; i++)

  {
    leds[i] = CHSV(h, 0, 255);
  }

  for ( int i = 0; i < 128; i = i + 3)
  {


    FastLED.setBrightness(i);
    FastLED.show();
    delay(10);
  }
  delay(50);
   for (int i = 0; i < NUM_LEDS; i++)

  {
    leds[i] = CHSV(0, 0, 0);
  }

}
```


SHARE YOUR IMPRESSIONS

ACKNOWLEDGEMENT

Gionata Gatto
Instructor

Miikka Lehtonen
Instructor

Simone Majocchi
Lab Instructor

Hani Asfour
Dean

DIDI

DUBAI INSTITUTE
OF DESIGN
AND INNOVATION

How do objects work? Can they act and convey emotions? This studio provides an overview of the design at the scale of products and interactive experiences. The course involves one study where objects of daily use are explored as agents in the constitutions of social interactions. Based on four interconnected and overlapping research phases (research, conceptualization, prototypes and synthesis), the studio provides means for designing products capable of communicating/mediating emotions. Students are required to explore and reinterpret everyday electronic objects, such as clocks, alarms, teapots, irons, as entities that communicate with humans and act autonomously. Topics analyzed during the course include interaction design; observation and critique of daily objects; research-through-design (RtD); nonhuman agency; internet of things; technology design.