HCI-PORTFOLIO

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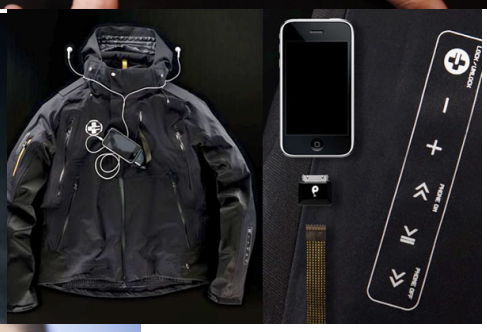
Wearables

Introduction

In the following your going to read about the previous weeks lectures and about wearable technologies, which we got introduced to by Tim. He opened up our eyes, how much a wearable “toy” can influence our life in a helpful way. After the lecture everybody had to do some research into the topic; what kinds of wearables are on the market at the moment, what kinds of techs are going to be released in the future. The second part of this assignments was to come up with new ways of social interaction or come up with a new way of communicating using smart tattoos.

Research phase (https://www.youtube.com/watch?v=RJqOG_-ge5w -future of w.)

After hearing about the topic wearables, my fantasy triggered. When I was a child I saw a movie called “Spy kids” and in this movie, one of the main characters got a modified watch, which could do almost everything, except show the time. I also remember how amusing I found the Inspector Gadget movies, as he could just get out anything from his hat/ body. When I started digging deeper into the topic I didn’t expect, how involved we really are with wearables. There are smart, hats, watches, clothing, glasses, skin attachable chips/ monitors, and I haven’t even started talking about the prosthetics and devices made specifically for people with certain disabilities. Here are some pictures about wearables which are already on the market, or soon to be. The most interesting finding for me was that, how close we are to have the “future” in our hands, and not just a dream anymore. I looked up multiple sites and videos about wearables, and I found out, that in reality no one really knows what will be the next “iPhone/iWatch”.



New ways of social interaction

After getting familiar with the topic, and doing extra research about what security measures are already tackled by new wearable technologies. I thought about a future design concept which could prevent violence before it could even happen. I know it might sound impossible first but, if you think about it, we have already have everything to create the most effective surveillance system, which could be applied to any wearable or smart device which can. This concept would be able to determine peoples intentions using biometric brainwave data of people, and could warn other people, who are in contact with him at the moment, or close friends and relatives, who could prevent the violent crime before even happening.

Imagine a room full of people, all of them is wearing a smart watch equipped with the biometric brainwave scanner, and somebody in the room decides to take a violent action on one of the other persons in the room, but because of his smart device, other people surrounding him get a waning notification, to watch out or to take action and start convincing the violent personal to stop or change his/ her mind even before he/she could harm anyone or do something which they might regret in the future.
This system could be the first step towards to a perfectly safe society and could be easily implemented into any smartphone, smartwatch or any other smart device which could be fitted with the biometric brainwave data option.

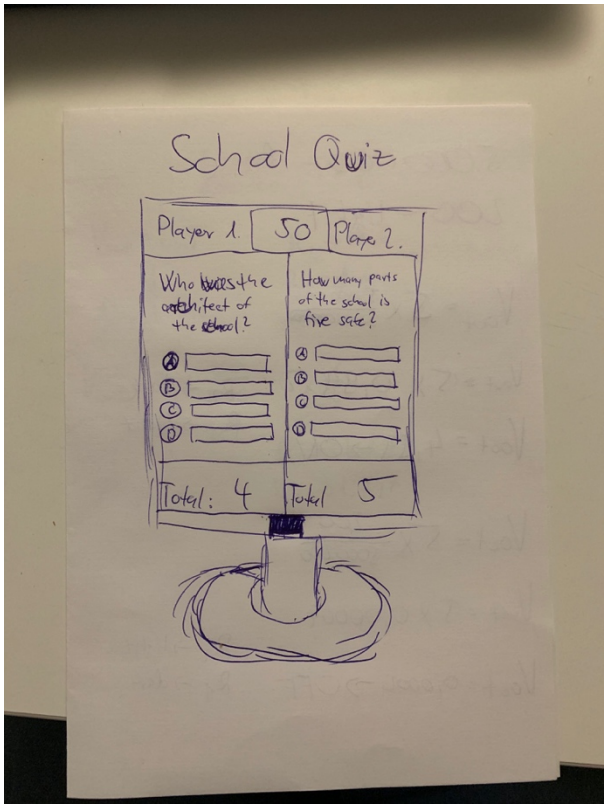
Reflection

When I think about smart devices, the first thing what pop's to my mind is something what is attached to us, or on us, just like a wearable. Wearables were not really a thing when I was a child, but nowadays when I look around I see everybody wearing some kind of them; a bracelet, a watch, a ring, a token. Which in my belief is good, it help us orient in the world, keeps track of our body, helps us in many different ways, and makes our life easier and safer in the same time. Hopefully, it will continue to do so in the future even more, and help even more people with their life. The most valuable aspect of this topic for me was, that I had to realize how far we already are with wearable technologies, and how fast the industry is growing.

Playful Interactions

New playful interaction concept

My new interactive playful interface is meant to encourage people visiting, studying or working in the THUAS building to know more about the history of the building, who built it, how many rooms, stairs the building has, how many students are visiting the campus at the moment. The playful interface would be applied to a bigger monitor placed on different key locations of the University, like the main entrance or at bigger junctions where more people will "play" with it. Through quiz challenges a pair of users would challenge each other, who can answer more questions correctly in a certain amount of time, and as a reward, the winner recieves a 5% discount coupon on the next purchase in the cafeteria from the machine.
With this way people will learn about the school effortlessly. The game is a multiplayer competitive game in a shared space, knowing and comparing each other's score during the interaction.



Research

https://vimeo.com/48514003

After doing some research on the playful interaction installations I found some pretty amazing design. A stair which was turned into a piano, a dancing stop light and finally a Street Pong lamp, which works pretty simply. At a pedestrian crossing the crossing button is modified into a gaming surface, while the light is green everything seems normal, the screen is slowly counting down with a green bar sinking until it's red again, but then the fun starts, because people waiting on one side can play a simple ping pong game with the person standing on the other side of the road, using the same console. This game is a multiplayer (two player game) where two individuals have to pass a shared object between each other Knowing and Comparing their status in the same time.

Reflection

My initial thought about the subject was that it's nice and everything but is it really that important, and what is a playful interaction. After doing some research about the topic and creating my new playful interaction it became clear to me, in how many ways could this be applicable into peoples' everyday life, making it easier and more enjoyable for them in the same time. In the future I believe there is going to be way more playful interactive designs used/ implemented, in order to create something special, as the designers did by adding piano function to a stair.

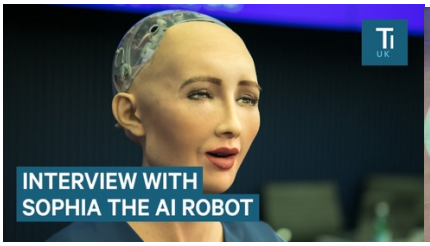
Artificial Creatures

Introduction

In the past weeks we had a lecture about Artificial Creatures, and after the lecture we had an assignment, where we had to describe an experiment using the Homeostasis model and apply it to a device. We had four different options to choose from. I choose to apply the model to a printer.

Research

Before getting started with the assignment I did some research about Artificial Creatures, what they are at the moment, and what they might become in the future. Most of the things what I found was related either to art or to A.I. robotics or domestic robots. Although, we think we know a lot, we still haven't scratched the surface of how to create the perfect A.I. or at least a Robot which understands and takes into account the emotional values. Other surprising finding was, that how many hospitals use welcome or assistant robots to help customers.



Printer

The primal needs of a printer a pretty simple. It needs electric energy just to start its function, than it needs paper to print on, otherwise it would be strange to call it a printer, if it cannot print on anything; and as last it needs ink to print with. These are the three primal need of the printer in order for fully fulfill its function. There are a lot of actions influencing the work process of this device, for example on the earlier versions the user had to put the papers to a specific slot in order for the machine to recognize it, the today's printers don't have that issue anymore, but if the paper isn't taken in by the machine correctly it might rip the paper, or get stuck in it, which would cause the system to fail, and send an error message to the user. A different action could be when people misplace certain colored inks, so the machine uses the wrong colors. But there are more dangerous external stimulations like for example somebody pouring a glass of water on the device while connected to the PC, and to a power source. In an extreme situation this could cause a full breakdown in the system and slam the fuse of the PC, which most likely means a lot of lost data. Of course this can be easily prevented by using the printer correctly.

Reflection

As long as I can remember I was obsessed with technology and with artificial creatures, toys, games but after so many years there is still a fears feeling inside me, when I think about how close we are to achieve a fully functional A.I. which could control every device what we have interaction with. But is it going to be like in the movies like "Terminator", "I, Robot", I believe that technology used in the right way can bring us further in life, understanding than without it. New is always better. The most valuable aspect of this topic was, that it opened up my eyes how much is to Artificial Creatures like art installation, A.I., robots, and many more.

AR&VR

Intro

In this part you're going to be reading about the Augmented/ Virtual reality technologies subject and the three concepts we made after the class about the subject, using AR or VR technologies. We also made a research after what kind of other cool things are out there on the market already. The last part of this part is going to be about Unreal Engine and a game created using the program.

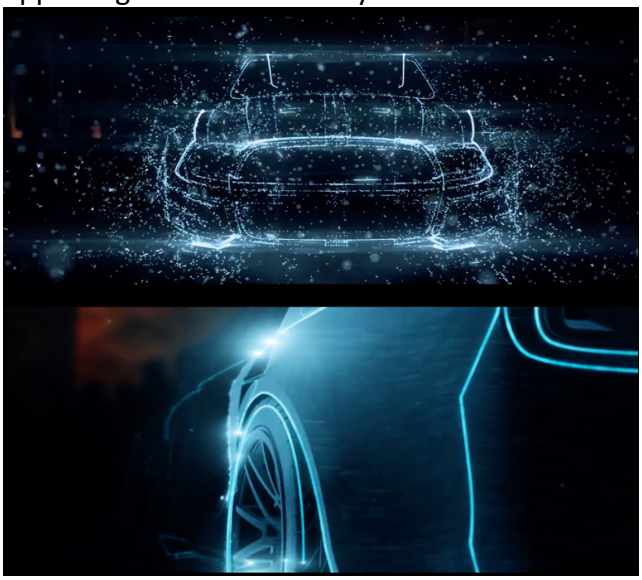
Three Concepts using Augmented or Virtual reality technology

1. Education

I want to achieve a VR system which works with VR glasses and student around the world would be able to use it. The goal for me would be to achieve an Educational system in VR, which means student would be able to attend classes from any point of the world in any location, in any educational facility. As soon as they put on the VR glasses and headphones the students would find themselves in a class room with other students using the same VR system, but without any disturbing noise. In the breaks of the lectures the students would be able to talk with each other in the same system using different "class rooms". With this system I would like to tackle under education around the world, so people could attend whatever class they want from wherever in the world, they just need a VR glass and a good internet connection.

2. Cars

With this concept I would like to achieve a futuristic marketing way for cars to be published for the first time. This concept would be about projecting a cool image or futuristic presentation onto a surface. When a car is firstly presented is hidden from public with a shade of some sort, by that state no one can see what is underneath the blanket but everybody sees the car shape. At this point I would project a pre-made interaction, like lines going through the hidden car like air would float through. My goal with this concept is to create a perfect marketing for car presentation, to make it even more exclusive and appealing for the future buyers.



3. Therapy

With my third concept I would like to help people, and most specifically people with phobias. That means I would like to help them by giving them to opportunity to try and overcome their fears by doing what they most fear of. For example a person who is afraid of heights could go paragliding in their own room by only placing a VR glass on their head, and running the right simulator. That could change how adjusted people are to certain situations and they can choose to prepare for something what gives them a phobia like agoraphobia.

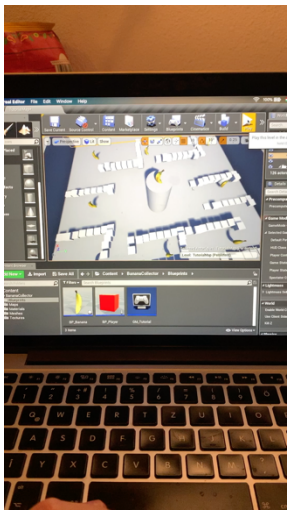
Research

https://www.youtube.com/watch?v=oH_LfXnklRw
https://www.youtube.com/watch?v=Ikwc1Xj2X1g
https://www.youtube.com/watch?v=6kLfxbP2IPk

I did some research in the field of AR & VR technologies and found some pretty amazing upcoming innovations for 2020/21 and new devices are developed and release by the biggest names like Samsung, HCI. The real question in my head was is this going to be really the future, having some kind of a device on our head, but then I found out how much can be achieve only using a camera on the phone. Of course, in the future I expect the AR to be way more advance and hopefully work by itself and not only through a camera or projector.

Unreal Engine expanded

In this part of this assignment I had to upgrade the interactive game what we had to previously create with a help of a unreal engine tutorial. The game is really basic, the user can interact with the red square, by using the keys W,A,S,D, and has to collect the bananas on the board. At least this was the first version, the upgraded version has multiple obstacles, walls in it, so the user has to go on a specific pattern in order to get all the bananas. The interaction is showcased in the video.



Reflection

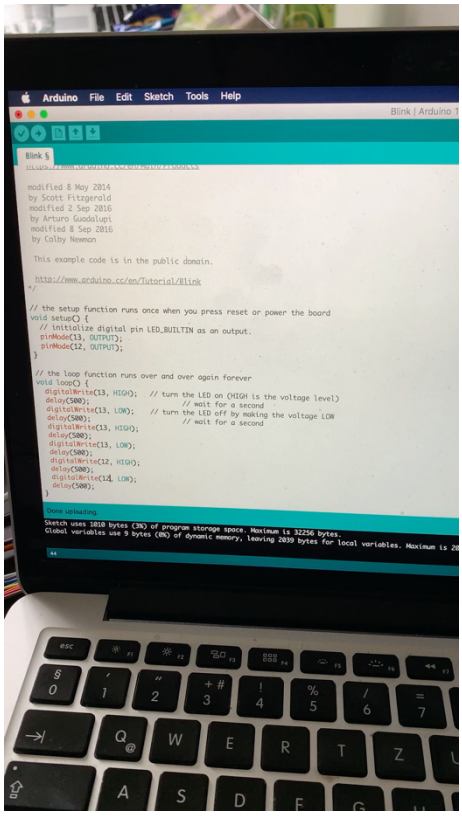
I believe AR&VR technologies might have been underrated in the past but today it's a pretty hot topic to talk about. Technology reached a level, where everybody has a pocket tv, camera in their possession, and with that tool so many interactive things can be achieved, like making a Virtual avatar appear on the screen showing where it would be in space in reality. But I believe this is about to change, soon these visual tricks are going to appear in front of us in 3D holographs or in other sorts of ways, to only question is, when?
The most valuable aspect of this topic for me was, that how amazing technology really can be, and how much is still there to be explored on this field.

Arduino Exercise 3c.

In this exercise we had to work with our Arduino kit and the Arduino application on our PC. We connected our Arduino with a breadboard using jumper wires and placed resistors and led lights into the breadboard as the tutorial was explaining it before with a base example. In the end we had to edit our codes to create two lightning up led lights but one of the lights is making a double blink by the time the other just blinks one.

Code:

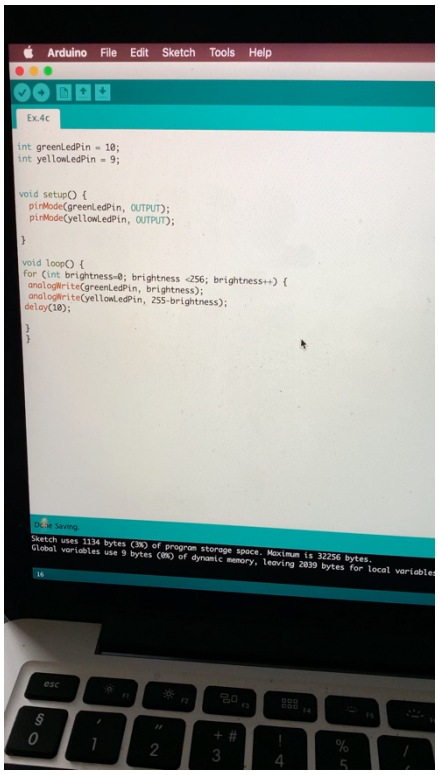
```
void setup() {
  pinMode(13, OUTPUT);
  pinMode(12, OUTPUT);
}

void loop() {
  digitalWrite(13, HIGH);
  digitalWrite(12, HIGH);
  delay(500);
  digitalWrite(12, LOW);
  delay(500);
  digitalWrite(12,HIGH);
  delay(500);
  digitalWrite(13, LOW);
  digitalWrite(12, LOW);
  delay(500);
 }
```



Arduino Exercise 4c.:

In this exercise we had to work again with our Arduino kit, and the app installed on our PC. We connected our Arduinos with jumper wires to the breadboard and used the previous layout of the Ex.3c. What we had to achieve can be seen in the video, that two lights where one of the LED lights fades in while the other one is fading out. This means while one of the lights is getting stronger the other one weakens. Although the LED lights where not the best the effect is still viewable.

Code:



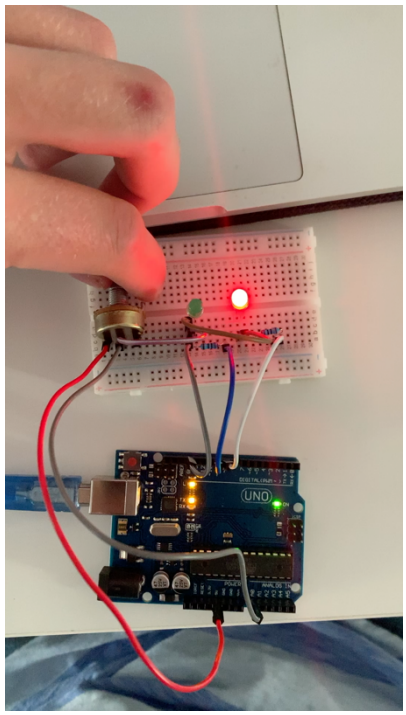

```
int greenLedPin = 10;
int yellowLedPin = 9;


void setup() {
  pinMode(greenLedPin, OUTPUT);
  pinMode(yellowLedPin, OUTPUT);

}

void loop() {
for (int brightness=0; brightness <256; brightness++) {
 analogWrite(greenLedPin, brightness);
 analogWrite(yellowLedPin, 255-brightness);
delay(25);

}
}
```

Arduino Exercise 6c.:

In this exercise we had to use our Arduino kit again and connect our Arduino with our PC program, than we connected the breadboard with the Arduino with jumper wires and added led lights, resistors and a potentiometer which is basically turn able stick. With the help of the tutorial we made the Arduino work with the potentiometer so the lights could fade and light up by only turning the stick of the potentiometer. The final challenge was to change the code so one of the LED lights would fades in while the other fades out. This is showcased in the video.

Code:

```
float sensorValue = 0;
int sensorPin = A0;
int redLedPin = 10;
int yellowLedPin = 9;

void setup() {
 pinMode(sensorPin, INPUT);
 Serial.begin(9600);
 pinMode(redLedPin, OUTPUT);
 pinMode(yellowLedPin, OUTPUT);
}

void loop() {
 sensorValue = analogRead(sensorPin);
 Serial.println(sensorValue);
 sensorValue = map(sensorValue, 0, 1023, 0, 255);
 analogWrite(redLedPin, sensorValue);
 analogWrite(yellowLedPin, 255-sensorValue);
 delay(20);
}
```

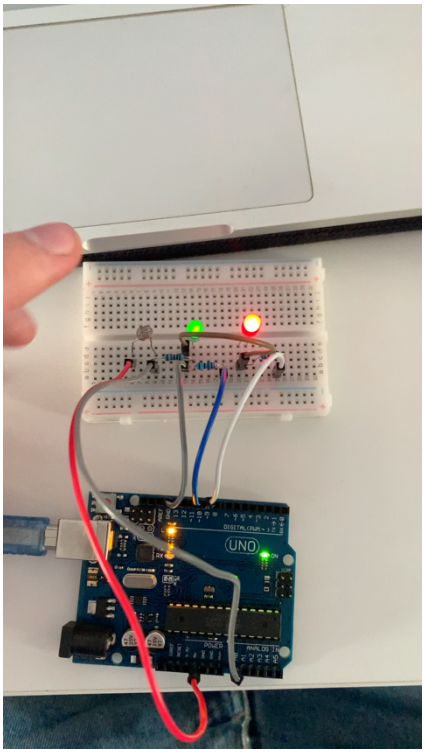


Arduino Exercise 7.:

In this assignment we used our Arduino kit and our program installed on our PC. We connected the Arduino with the breadboard according to the tutorial, we placed jumper wires, LED lights, resistors and a light sensor (LDR). Our task was to create a system which reacts to light, so when there is a lot of light the LED lights will shine bright up, while when we place our hand in between the light and the sensor the LED lights turn off the light.

Code:

```
float sensorValue = 0;
int sensorPin = A0;
int redLedPin = 10;
int yellowLedPin = 9;

void setup() {
 pinMode(sensorPin, INPUT);
 Serial.begin(9600);
 pinMode(redLedPin, OUTPUT);
 pinMode(yellowLedPin, OUTPUT);
}

void loop() {
 sensorValue = analogRead(sensorPin);
 Serial.println(sensorValue);
 sensorValue = map(sensorValue, 550, 780, 0, 255);
 sensorValue = constrain(sensorValue, 0, 255);
 analogWrite(redLedPin, sensorValue);
 analogWrite(yellowLedPin, sensorValue);
 delay(20);
}
```

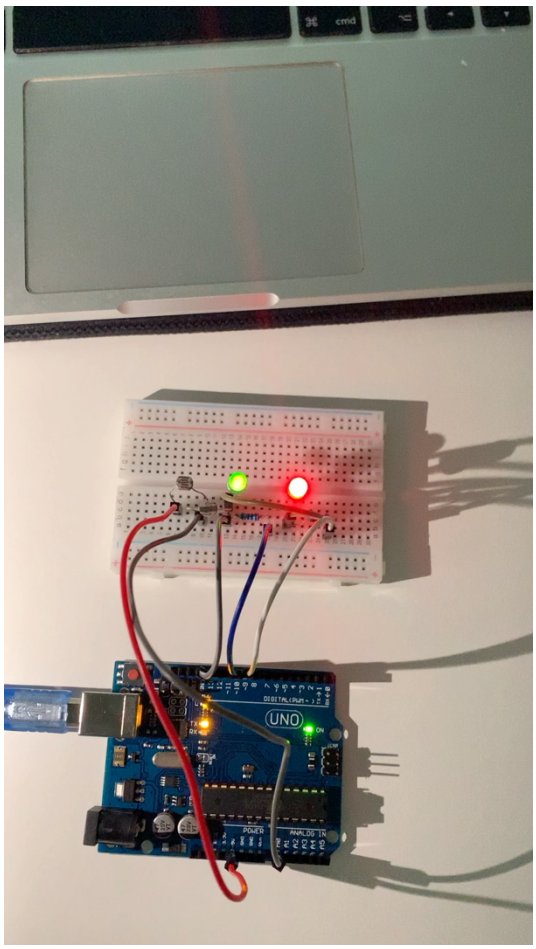


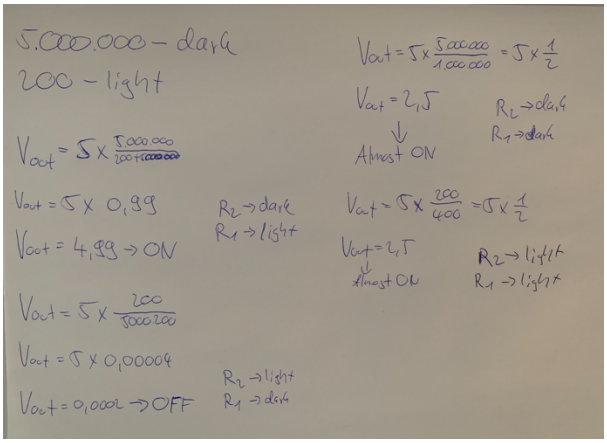
Arduino Exercise 8.:

In this assignment we used our Arduino kit and program installed on our PC. We connected the Arduino with the breadboard according to the tutorial with jumper wires, LED lights, resistors and two light sensors. In the assignment we had to firs calculate how to get the perfect voltage to light up the LED lights and in what lightning they will light up, so when there is a lot of light they shut down, and when there is no concentrated light on the sensors they light up. Similar system is working in the todays car, when we set the reflector light of the car automatic.

Code:

```
float sensorValue = 0; // variable for sensor value
int sensorPin = A0; // variable for sensor pin
int greenLedPin = 10;
int redLedPin = 9;

void setup() {
 pinMode(sensorPin, INPUT);
 Serial.begin(9600);
 pinMode(greenLedPin, OUTPUT);
 pinMode(redLedPin, OUTPUT);
}

void loop() {
 sensorValue = analogRead(sensorPin);
 Serial.println(sensorValue);
 sensorValue = map(sensorValue, 320, 457, 0, 255);
 sensorValue = constrain(sensorValue, 0, 255);
 analogWrite(redLedPin, sensorValue);
 analogWrite(greenLedPin, sensorValue);
 delay(20);
}
```

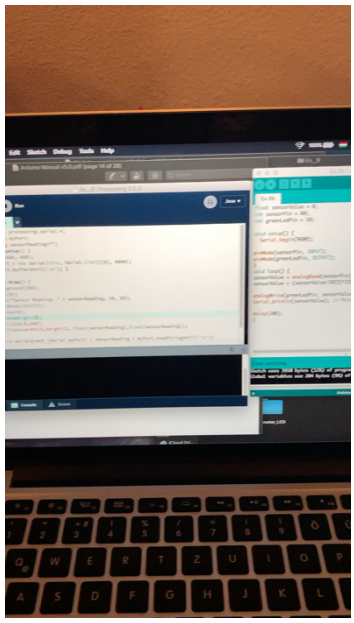




Arduino Exercise 9b.:

In this assignment we had to use our Arduino kit and our program on our PC, and a program called Processing. We had to first recreate the layout of the exercise 6 and also adjust a code in Processing, in order to make the interaction happen. While the Processing code is running we are able to adjust the sensor so when we turn it up the lights go up and on the screen a red/pink circle starts to grow, and in the other way around, so when we turn the sensor downwards the circle starts to shrink and the light goes slowly off.

Arduino Code:



```
float sensorValue = 0;
int sensorPin = A0;
int greenLedPin = 10;

void setup() {
  Serial.begin(9600);

pinMode(sensorPin, INPUT);
pinMode(greenLedPin, OUTPUT);
}
void loop() {
sensorValue = analogRead(sensorPin);
sensorValue = (sensorValue/1023)*255;

analogWrite(greenLedPin, sensorValue);// Send power to LED
Serial.println(sensorValue); // Print the sensorValue to the serial // connection

delay(100);
}
```

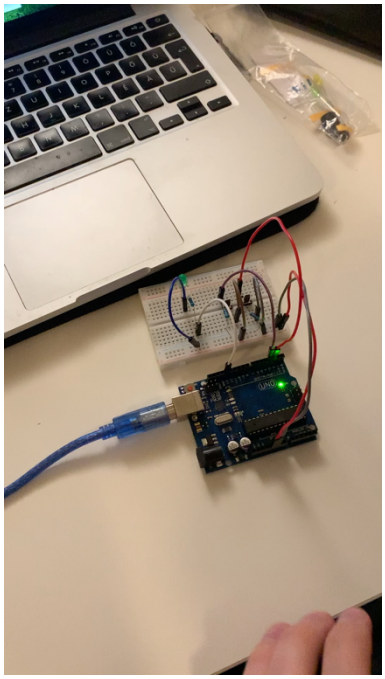
Processing Code:

```
import processing.serial.*;
Serial myPort;
String sensorReading="";
void setup() {
size(400, 400);
myPort = new Serial(this, Serial.list()[5], 9600);
myPort.bufferUntil('\n'); }

void draw() {
background(255);
fill(0);
text("Sensor Reading: " + sensorReading, 20, 20);
rectMode(CENTER);
stroke(0);
strokeWeight(5);
fill(210,0,100);
 ellipse(width/2,height/2, float(sensorReading),float(sensorReading));
}
void serialEvent (Serial myPort) { sensorReading = myPort.readStringUntil('\n');
}
```

Arduino Exercise 10f.:

In this exercise we had to work with our Arduino kit and program installed on our PC. We had to connect our Arduino according to the tutorial, and then change Arduino code so the lights can be switched on by clicking on of the buttons. After achieving that we had to make it impossible to turn on the light while clicking both of the buttons, but still the lights can be turned on by clicking just one of the buttons, but when both buttons are pushed down simultaneously the light stay switched off.

Code:



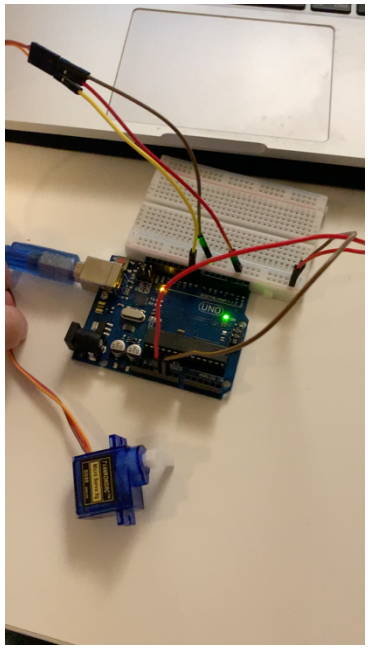
```
void setup(){
  pinMode(13, OUTPUT);
  pinMode(3, INPUT);
  pinMode(2, INPUT);
}

void loop(){
  if(digitalRead(3) == HIGH && digitalRead (2) == HIGH){
    digitalWrite(13, LOW);
  }
  else if(digitalRead(3) == HIGH || digitalRead (2) == HIGH){
    digitalWrite(13, HIGH);
  }
  else{
  digitalWrite(13, LOW);
  }
}
```

Arduino Exercise 11b.:

In this assignment we had to work with our Arduino kit and program installed to our PC. We had to connect the Arduino, breadboard with jumper wires and servomotor according to the tutorial. We had to change the code so the servo moves in a funny, rhythmic way, so when I let go of my servo, it slowly walks away like in a silly way. In the video the interaction is showcased.

Code:

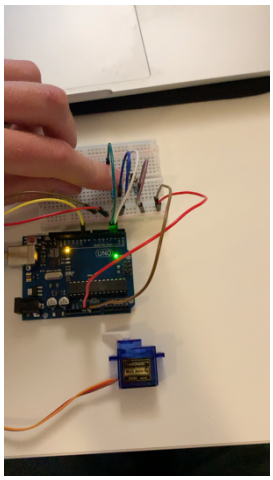
```
#include <Servo.h>

Servo myServo; // Declare a servo object for us to control
int servoPin = 9; // Var for the pin the servo connects to
int pos = 0; // Var to keep track of the servo's position

void setup() {
  myServo.attach(servoPin); // Tell the servo to what pin it's connected to
}

void loop() {
  for(pos = 0; pos < 75; pos += 2){
  myServo.write(pos);
  delay(6);
  }
  for(pos = 75; pos >= 1; pos -= 2){
  myServo.write(pos);
  delay(6);
  }
}
```



Arduino Exercise 12b.:

In this assignment we had to use our Arduino kit and the program installed on our PC. We followed the tutorial to create the Arduino system, and connected all the necessary jumper wires, resistors, buttons and a servo. Our goal was to make the servo move when one of the buttons are pushed. The final goal was to set a function to each button, which means if the left button was pushed the servo turned clockwise and when the right one was pushed it turned anti-clockwise. The result can be seen in the video.

Code:

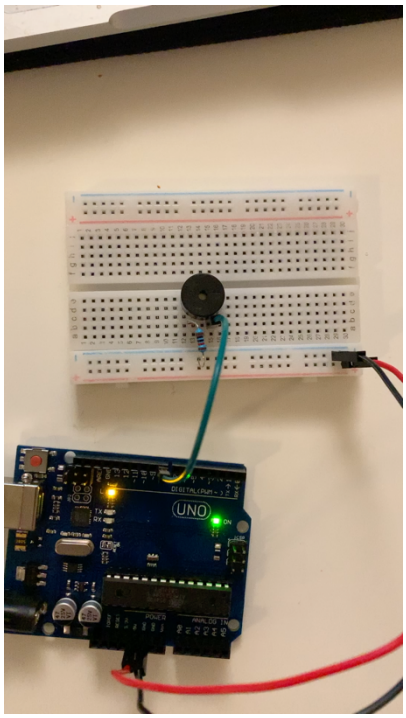


```
#include <Servo.h>
Servo myServo; // Declare a servo object for us to control
int servoPin = 9; // Var for the pin the servo connects to
int pos = 0; // Var to keep track of the servo's position
int buttonPinL = 3; // Var for the pin of the left button
int buttonPinR = 2; // Var for the pin of the right button

void setup() {
  myServo.attach(servoPin); // Tell the servo to what pin it's connected to
  pinMode(buttonPinL, INPUT); // Set the left button pin to input
  pinMode(buttonPinR, INPUT); // Set the right button pin to input
 }

void loop() {
  if(digitalRead(buttonPinR)==HIGH && pos<=160){
    pos++;
    myServo.write(pos);
    delay(5);
  }
  else if(digitalRead(buttonPinL)==HIGH && pos>=0){
    pos--;
    myServo.write(pos);
    delay(5);
  }
}
```

Arduino Exercise 13b.:

In this exercise we had to use our Arduino kit and the program install on our PC. We connected the Arduino with the breadboard using jumping wires, a resistor and the piezo speaker. The final version had to play a specific sound which I putted into the code, and it’s playing a rhyme of mine. Sadly my speaker was playing the “music” really quietly, but in the video below the action can be heard.

Arduino Code:




```
#include"notes.h"
int speakerPin = 8;
int note[] = {
  NOTE_Cblack5, NOTE_Cblack6, NOTE_Gblack5,
 NOTE_Fblack5, NOTE_Fblack6, NOTE_Gblack5,
 NOTE_F6, NOTE_Gblack5, NOTE_Cblack5,
 NOTE_Cblack6, NOTE_Gblack5, NOTE_Fblack5,
 NOTE_Fblack6, END
};
int noteDuration = 200;

void setup() {
 pinMode(speakerPin, OUTPUT);
}

void loop() {
 for(int i=0; note[i]!=-1; i++){
   tone(speakerPin, note[i], noteDuration);
   delay(noteDuration);
 }
}
```

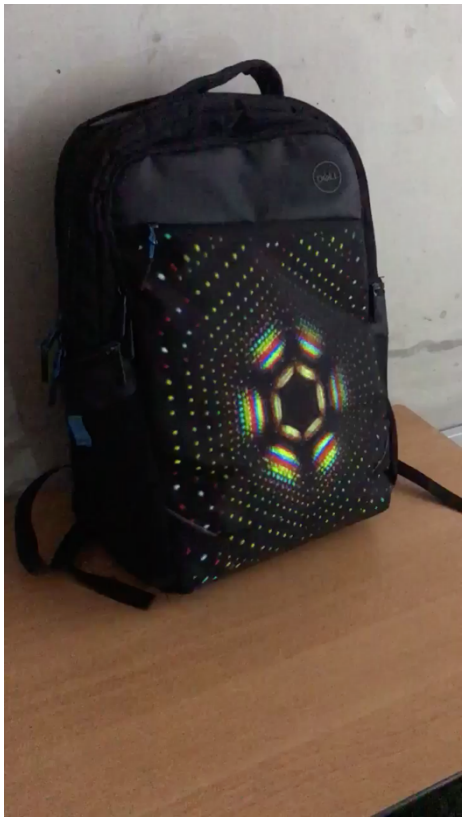
Sublime notes:

```
#define NOTE_Cblack5 554
#define NOTE_Cblack6 1109
#define NOTE_Gblack5 831
#define NOTE_Fblack5 740
#define NOTE_Fblack6 1480
#define NOTE_F6 1397
#define END -1
```

Augmented Reality

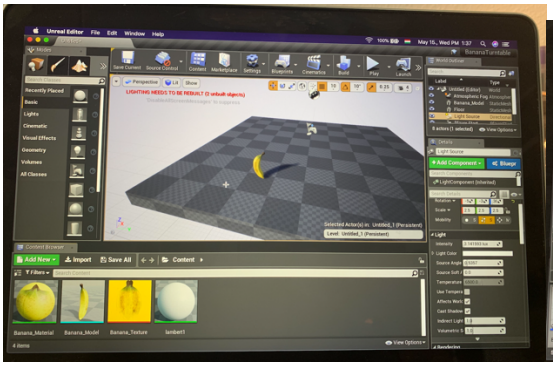
In this assignment I worked together with Lukasz as a team, to create the assignments. Our goal was to create two interactions using the MadMapper program and a projector in order to project images in our case GIF-s on to a non-flat surfaces. Our first object what we used for the assignment was a trash bin and voice control to make the bin appear on fire when it's exposed to high volume. To make this happen we found a suitable flame gif and projected it to the trash bin. Because the voice controls the opacity of the image we had to specify the source range for the voice control as the picking of the microphone was too low at the first try and didn't make the flames appear as we intended it but at the end the problem got solved and in our video the end result is presented.

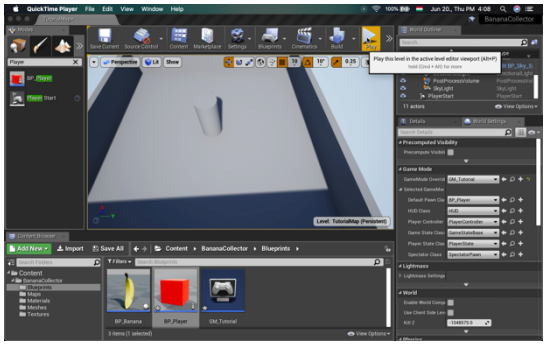
For the second object we wanted to achieve a projected backpack design because we realized how cool it would look if the bag would look if it had a screen in it, but in reality it was only our projection on it. We used a patterns gif and projected it onto the "screen" looking part of the backpack; so in the final video it effect can be seen on the backpack with the light tunnel visuals on it.

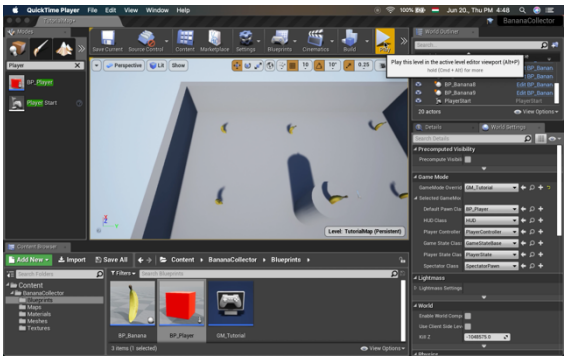


Unreal Engine- Banana experiment

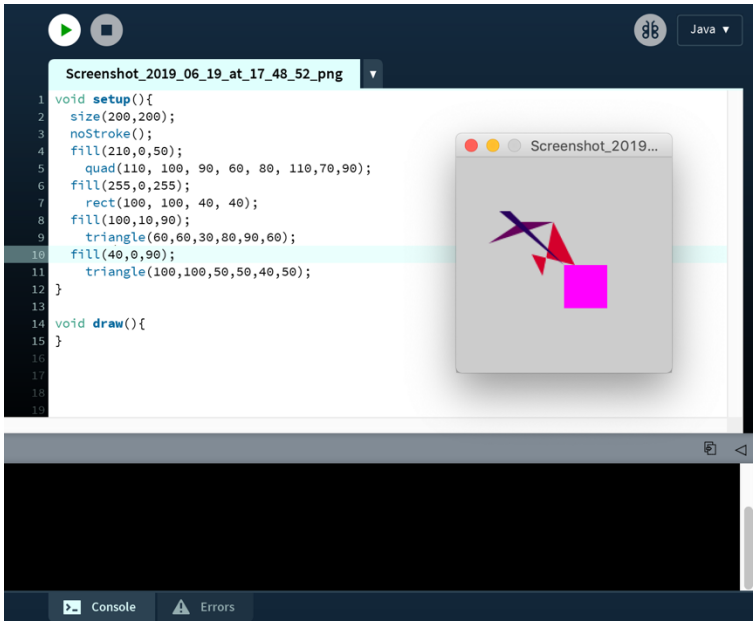
In this part of the course we had the chance to get a glimpse into the world of Unreal Engines Editor where we had to recreate two simulations.
The first tutorial introduced us to the basics of the program and how to create our first blueprints and at the end a spinning banana.
The second tutorial was way more complex than the first one, because in this one we had to create an interactive game. In this game the user can control a red square by clicking the W,A,S,D buttons and then can move around the small maze, where bananas are spinning and waiting to be “picked up” by the red square, so when the user goes through them they disappear.

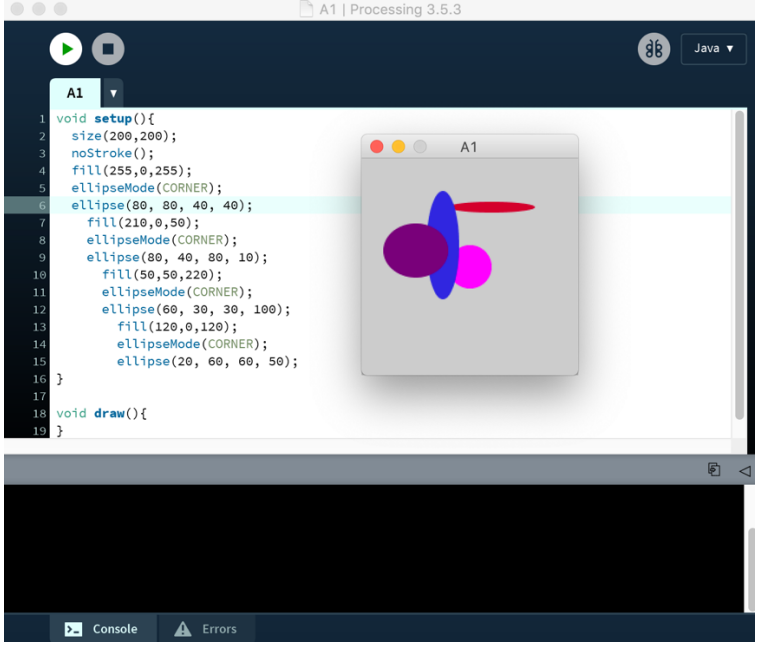


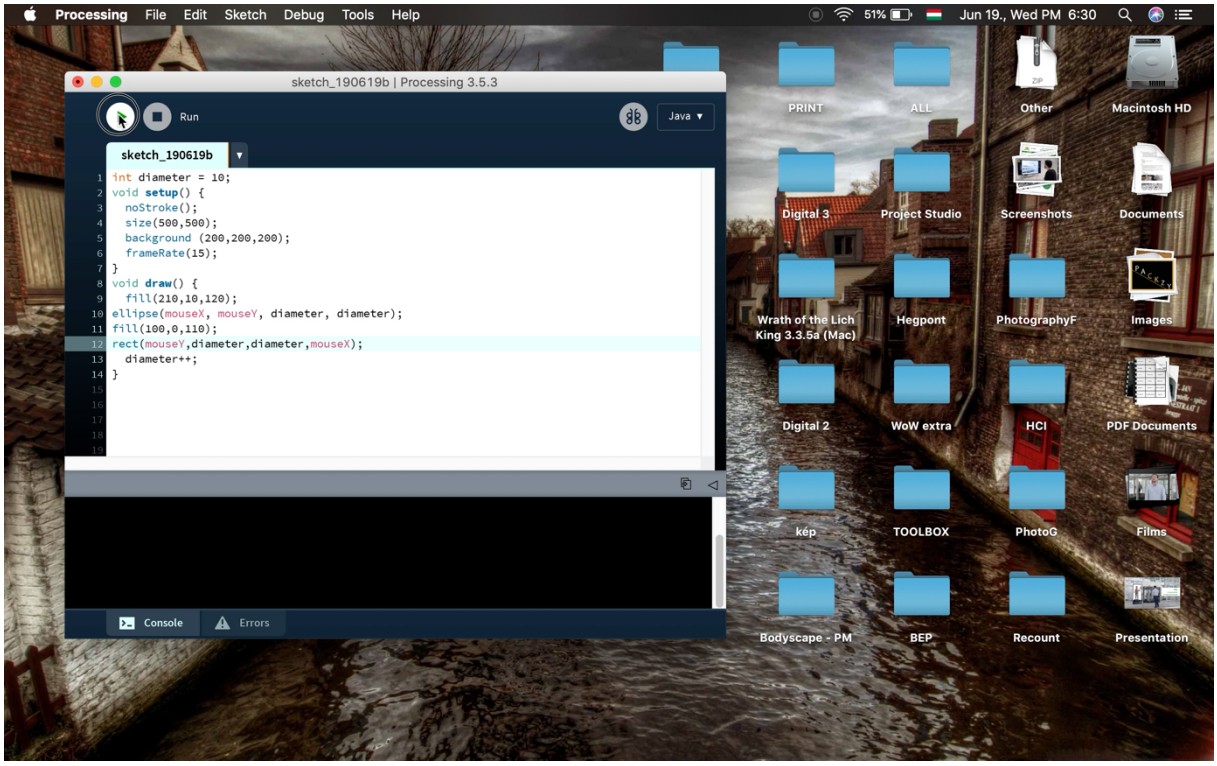


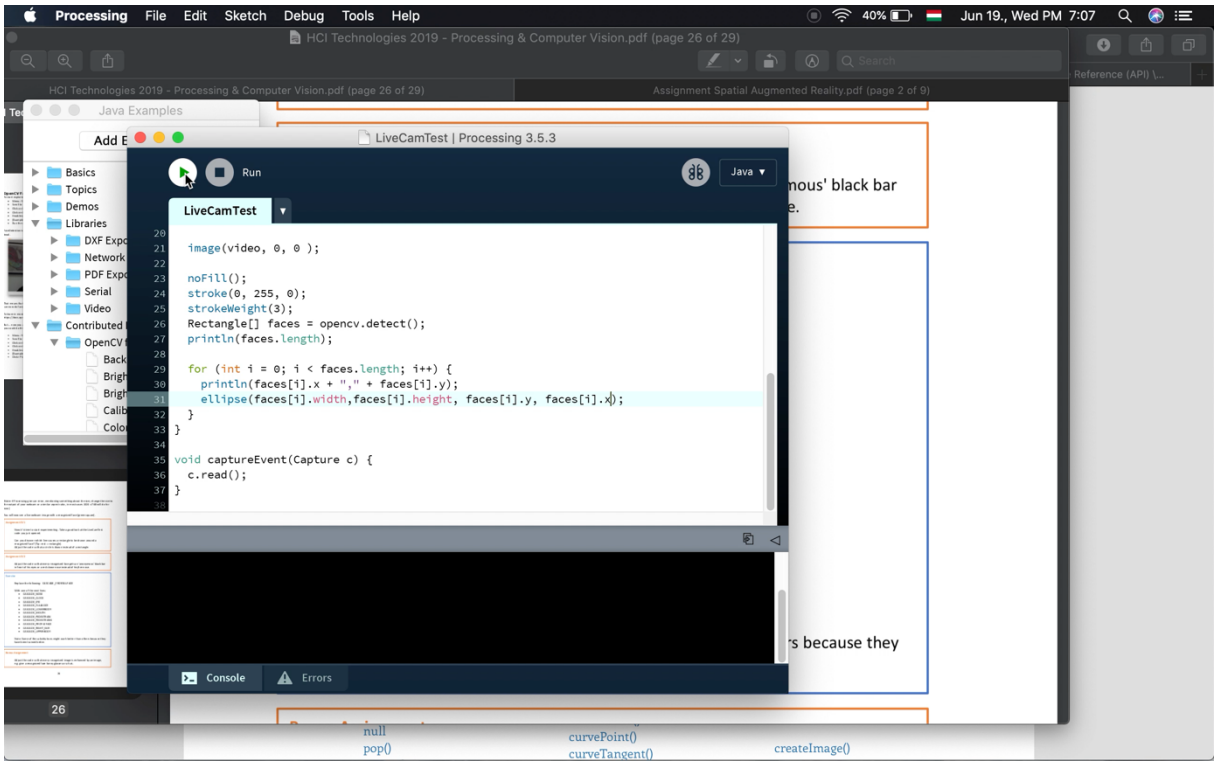


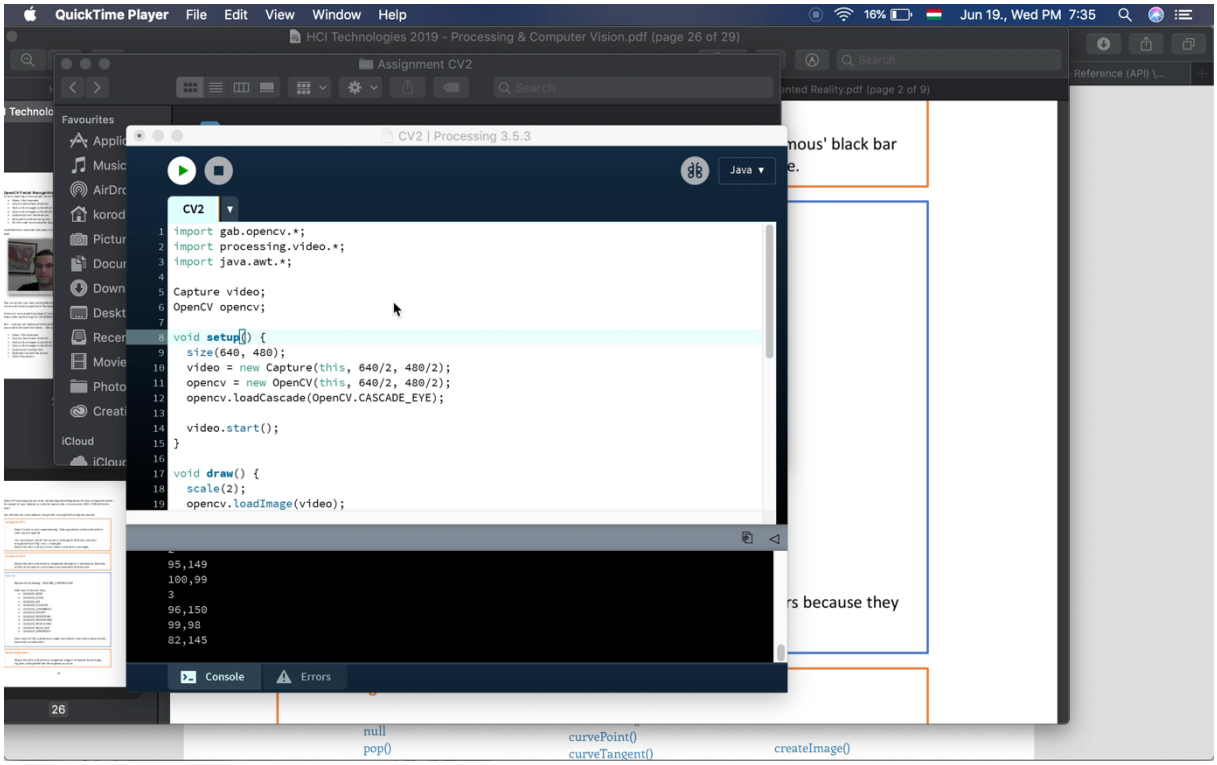
Computer Vision

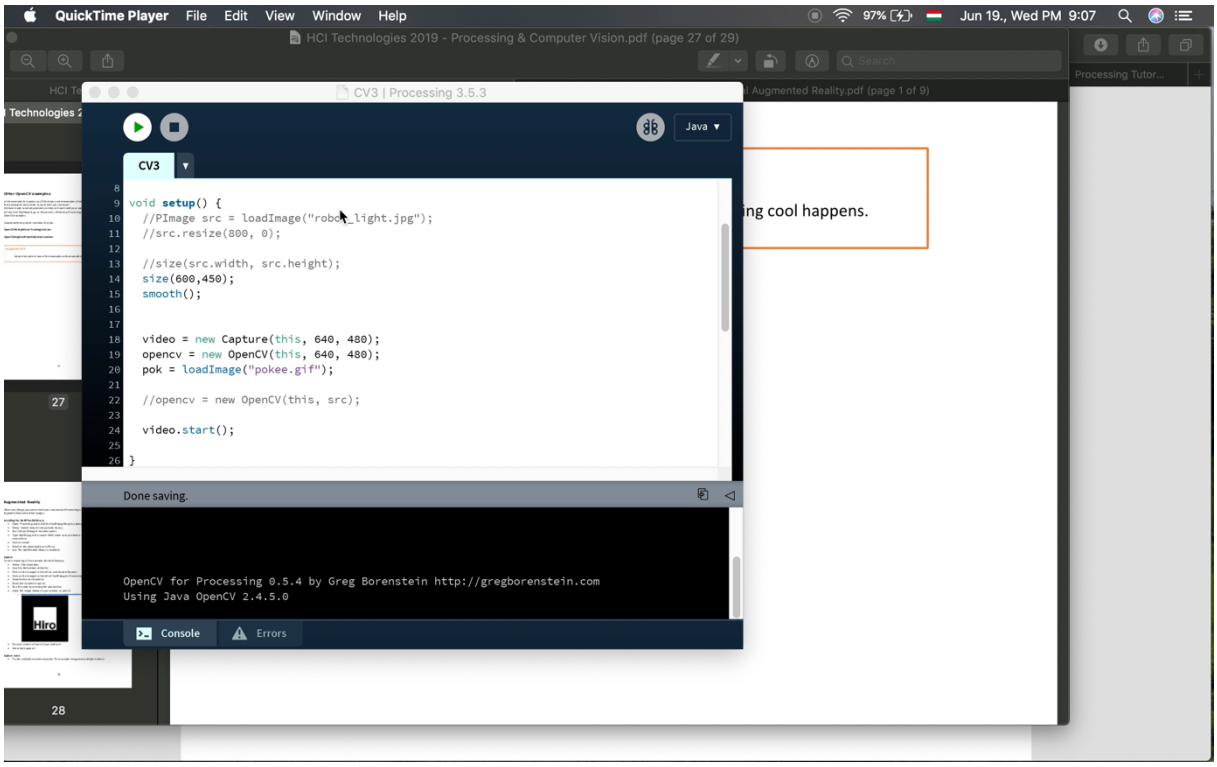


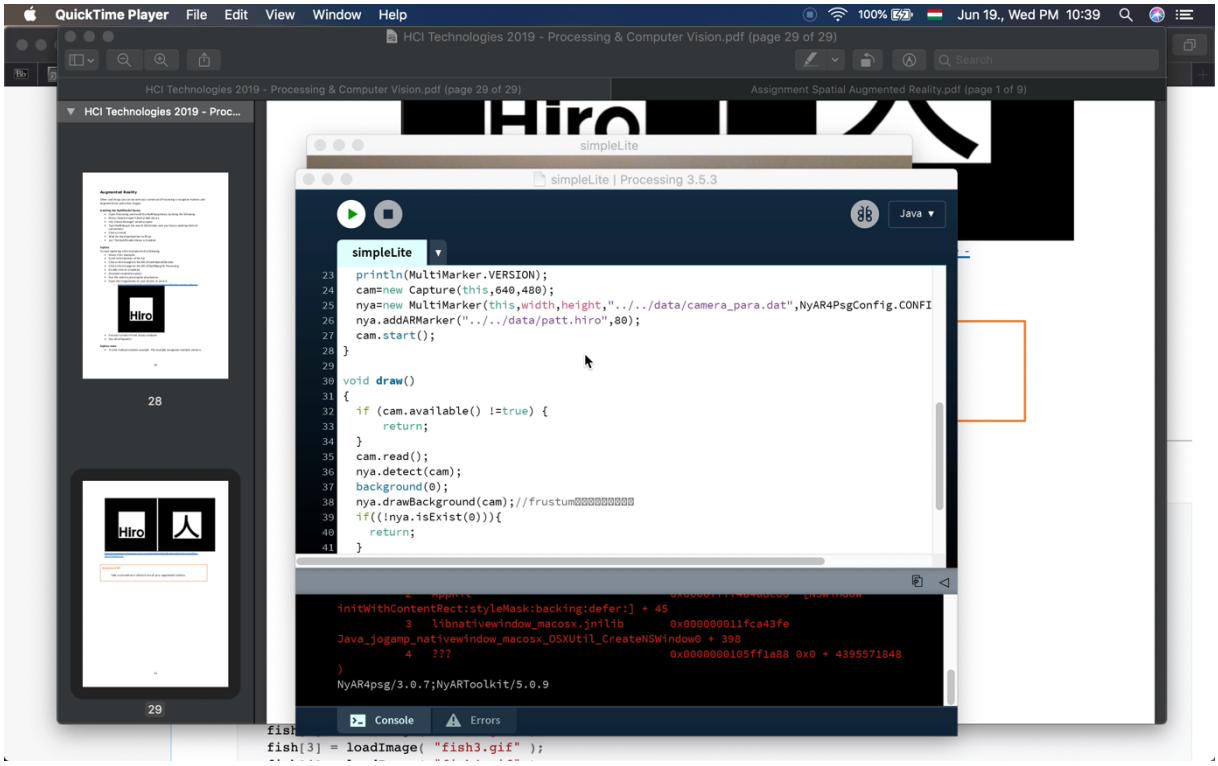



Processing File Edit Sketch Debug Tools Help
51%
Jun 19., Wed PM 6:30
sketch_190619b | Processing 3.5.3
Run
Java
sketch_190619b
int diameter = 10;
void setup() {
noStroke();
size(500,500);
background (200,200,200);
frameRate(15);
}
void draw() {
fill(210,10,120);
ellipse(mouseX, mouseY, diameter, diameter);
fill(100,0,110);
rect(mouseY,diameter,diameter,mouseX);
diameter++;
}
Console
Errors
PRINT
ALL
Other
Macintosh HD
Digital 3
Project Studio
Screenshots
Documents
Wrath of the Lich King 3.3.5a (Mac)
Hegpont
PhotographyF
Images
Digital 2
WoW extra
HCI
PDF Documents
kép
TOOLBOX
PhotoG
Films
Bodyscape - PM
BEP
Recount
Presentation


Processing File Edit Sketch Debug Tools Help
40%
Jun 19., Wed PM 7:07
HCI Technologies 2019 - Processing & Computer Vision.pdf (page 26 of 29)
Assignment Spatial Augmented Reality.pdf (page 2 of 9)
Java Examples
Basics
Topics
Demos
Libraries
DXF Exp
Network
PDF Exp
Serial
Video
Contributed
OpenCV
LiveCamTest | Processing 3.5.3
Run
Java
LiveCamTest
image(video, 0, 0);
noFill();
stroke(0, 255, 0);
strokeWeight(3);
Rectangle[] faces = opencv.detect();
println(faces.length);
for (int i = 0; i < faces.length; i++) {
println(faces[i].x + "," + faces[i].y);
ellipse(faces[i].width,faces[i].height, faces[i].x, faces[i].y);
}
}
void captureEvent(Capture c) {
c.read();
}
Console
Errors
26
null
pop()
curvePoint()
curveTangent()
createImage()


QuickTime Player File Edit View Window Help
16% Jun 19., Wed PM 7:35
HCI Technologies 2019 - Processing & Computer Vision.pdf (page 26 of 29)
Assignment CV2
CV2 | Processing 3.5.3
Java
CV2
import gab.opencv.*;
import processing.video.*;
import java.awt.*;
Capture video;
OpenCV opencv;
void setup() {
size(640, 480);
video = new Capture(this, 640/2, 480/2);
opencv = new OpenCV(this, 640/2, 480/2);
opencv.loadCascade(OpenCV.CASCADE_EYE);
video.start();
}
void draw() {
scale(2);
opencv.loadImage(video);
95,149
100,99
3
96,150
99,98
82,145
Console
Errors
null
pop()
curvePoint()
curveTangent()
createImage()


QuickTime Player File Edit View Window Help
97% Jun 19., Wed PM 9:07
HCI Technologies 2019 - Processing & Computer Vision.pdf (page 27 of 29)
CV3 | Processing 3.5.3
Java
CV3
void setup() {
//PImage src = loadImage("robot_light.jpg");
//src.resize(800, 0);
//size(src.width, src.height);
size(600,450);
smooth();
video = new Capture(this, 640, 480);
opencv = new OpenCV(this, 640, 480);
pok = loadImage("pokee.gif");
//opencv = new OpenCV(this, src);
video.start();
}
Done saving.
OpenCV for Processing 0.5.4 by Greg Borenstein http://gregborenstein.com
Using Java OpenCV 2.4.5.0
Console
Errors



Excursion

Intro

During the HCI course we had one day for an excursion to the NEMO Science Museum, where we had to chance to see and explore all the interactive installations inside the building. Although we were warned that this Museum was initially meant for smaller children, the museum turned out to be interesting for all age groups by making science seem so easy, and doable for anyone, even for a 8 year old. As we reach the top floors of the museum we can find more advanced concepts then on the ground floor, where the simpler experiments are showcased.

Assignment

The most interesting installation called “Energize”, which can be found on the second floor of NEMO. The intended goal of this installation is to challenge the users to capture as much energy as they can from light, wind and water and the energy gets transmitted to an object which starts moving/ functioning from the harvested energy. According to the description, the more efficiently the energy is converted the faster the object moves.
When first approaching the installation the first thing what pops in front of our eyes is the different colored collector controls, which are all different looking, not only in size but also differ in what kind of sensor it’s used on it. There is one installation with a propeller in it, which collects air blown from the wall in front of it, and when we point it to the right direction, air starts to float through it and that air makes the propeller spin, which than generates energy; that energy gets transmitted to the object powered by it, and starts functioning as the converted energy reaches it. The second type installation works with light and solar panels; pointing it to the right direction (towards to a light source), the solar panel collects the energy and starts transmitting it to the object. The third type collects the energy of water, using propeller blades, so when the water drops on it, the blade turns and converts energy into electricity, which than gets transmitted to the object. This might seem boring by itself, so the creators turned the interaction up by making the collection of the energy trickier, for example, when trying to collect the solar energy, the light source is changing its location in every 10-15 sec, so the user has to turn the solar collector towards to the next location of the light. I found this project interesting not specifically because of how you can interact with it, so move the collectors, but what it represent, an ECO energy source, which opens up people and mostly children minds about how many different ways there is to harvest and convert energy into electricity in this case. We should be more aware of how we use energy but we should be even more in control where we get that energy from and that’s what in my believe this installation shows to the visitors.

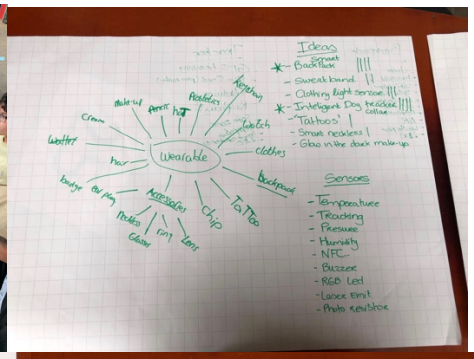
Reflection

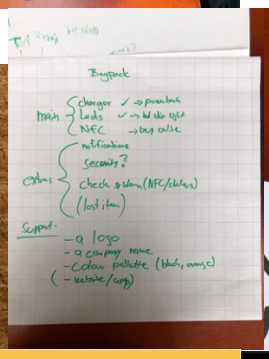
I leant from this excursion to always keep an open mind for anything new, because sometimes things seem impossible to do before trying it, but as soon as we start going down the road we realize that it's just the overthinking making us think less of ourselves. This also why I think the excursion was valuable, because most likely if the school would not have organized this event I would not have visited the Museum although I found the structure of the building attractive, but never really approached it. But because they did, we had the chance to learn about physics and about other interactive projects.

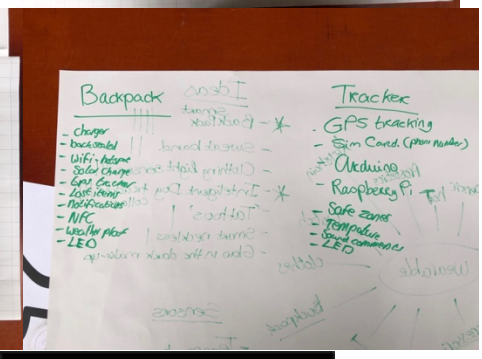
Process

Day 1.

The first day of the two lab weeks started off, with a welcome speech by Chris in Maak Haven, a workshop building close to the University. After the intro we were sorted into groups according to what we assigned for in a previous questionnaire. There were four types of groups: 1.AR&VR; 2.Artificial Creatures; 3.Playful intercations;4. Wearables. I was assigned for the Wearables project with four other people in a group. A girl called Wenyi, and three guys, Quinten, Geert and Ping (a fellow UX-student). We started off by introducing to each other and we basically jumped right into the brainstorming and coming up with ideas, what to create in this short amount of time, but still we wanted to make something fun and challenging in the same time. We came up with a lot of options, but we narrowed it down quickly to two directions. A "smart collar" for dogs, and a "smart backpack"; after a quick vote about which one to try to make the end, the votes were on the backpack. Everybody started researching smart backpacks on the market right now, and to figure out what makes them smart, and what we should have in our backpack concept. We came with a lot of things, what we want in our backpack, so we took it a step further by creating logos to the concept.

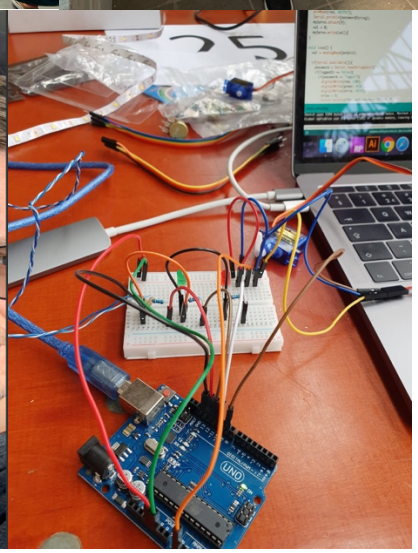
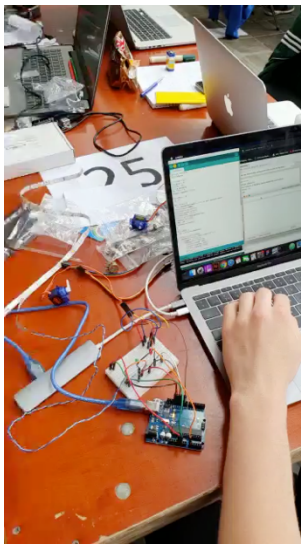






Day 2.

The first day went pretty smoothly and because that we were so advanced with our main project, we started exploring different kinds of things, like how does a robotic arm work, can we create it by using Arduino. Before we could start doing that, we had a guest lecture from the firm Next Empire. We found some interesting concepts and started thinking of what we need for it to create it with the help of some cardboards, and couple servos. The other half of the group started exploring, playing around with the Arduino and figured out how to make a log in/out. We also figured out how a GPS works and tried to come up with a way to use that in our backpack. I worked on the exploration of different concepts, and on the robotic arm, helped out with the GPS system as well.

Day 3.

This morning started off as the previous one, with a guest lecture, but this time it was about A.I. /Robots. After the lecture we went back to take a look at our Scrum board. We started doing two things simultaneously in the group. Half of the people started building the robotic arm and the other half of the group kept focusing on the coding part of the locking mechanism and figure out a way/ find a suitable library to make the OLED display show what we want it to show. I worked in the robotic arm group alongside Ping and Wenyi.

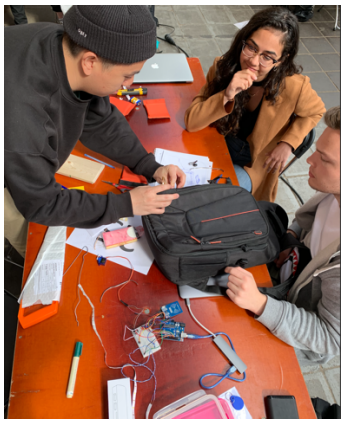
Day 4.

We started off this day as the previous ones with a guest lecture but this time it was about Artificial creatures. After that the group set down to discuss what to create as our end product and what to leave behind. As a group we decided to let the robotic arm idea go, which initially would have been on the backpack, like picking out staff from the bag, but we found it not suitable for this smart backpack. For the rest of the day we were synching up the display with the lock mechanism and made our promise. I worked on the promise and helped with the synchronization as well, and tried to come up with more applicable ideas to the smart backpack.

Day 5.

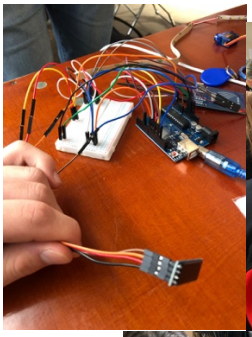
We started off this day like the past three days, with a guest lecture now about Playful Interfaces. After the lecture we sat down with the group to make a small brainstorm session about what else we could do, which idea to iterate more. Then we started creating the

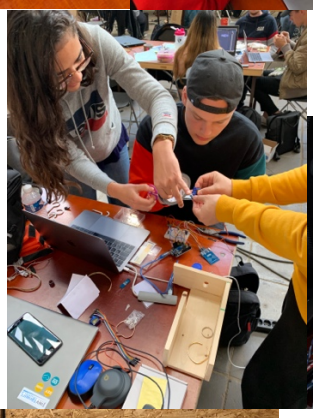
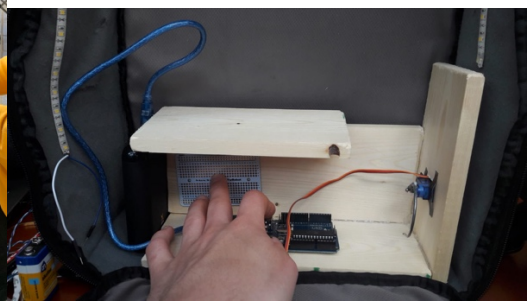
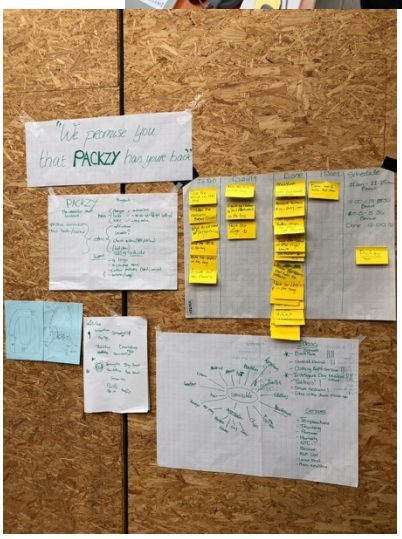
wooden box, which would serve as the protector of the Arduino and in the same time, the lock can be attached to it. We tested the locks after attaching it to the wooden box. After figuring that out, we started coming up with ways, how we should put the whole concept with wooden box into the backpack.



Day 6.

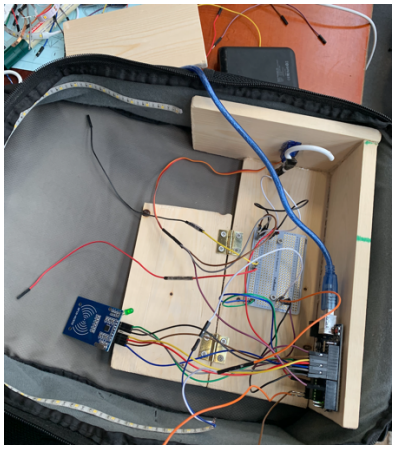
On this day we didn't started off the week with a guest lecture instead we could jump into the work right away in the morning. Unfortunately we wanted to test out the display what we put together on the previous day but instead of testing we managed to burn down our OLED Displays, so we ordered a new one. Another setback for our team was with the NFC reader which apparently got dropped on the floor accidentally and by that it broke or at least didn't function as we wanted it to function. The only positive thing was that we had the coding by then. We asked Chris for some support and his suggestion was to try re wiring the system or if that doesn't work, we should order a new one. We tried to fix the NFC reader, and we managed to bring it half ways to life but we still order just for the presentation day. Then we made a blueprint about how to put the lock and lights into the backpack and made the physical logo. We browed an NFC reader and display from another group, just to test our system with them.

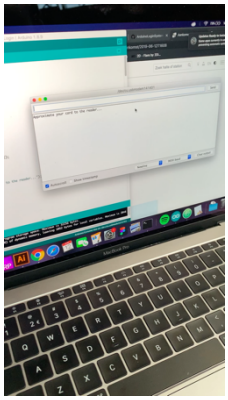


Day 7.

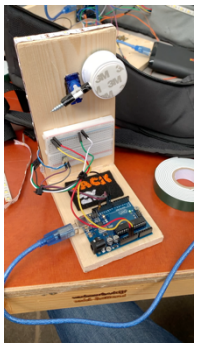
On this day we started off by looking at our Scrum board to see what has been done and what still has to be done until the Expo. We ordered backup materials (NFC reader, OLED display) just in case something goes wrong with the new ones, and we would not have time to buy them later. We created the poster for the expo for our branding and also did some handy work by creating a showcase model of the locking system, so people on the Expo can see the interaction happening in the backpack regardless if it open or closed at the moment. So we started building the system in a small scale model. We also tested out the cabling and the codes, just to be sure. At the end of the day we started planning the expo, what we need, how we will set it up. I worked on the showcase model and helped with the testing.

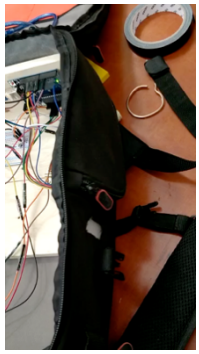




Day 8.

This was the last day before the expo, so everything had to be finished by the end of the day. We had to relocate our working environment to the intended presentation zoon and we started putting together the whole concept. We fixed down everything so the box could not be taken out or repositioned in the backpack, we also managed all the cables and tried to zip them together for the easier overview. After finishing up the cable management of the cables we tested the whole backpack if everything works as it should. The only thing what we were missing was a OLED display which arrived only on the next day.
We put together the final showcase model, and tested it out, so everything will function as we wanted it to function, and most important when we want it to.

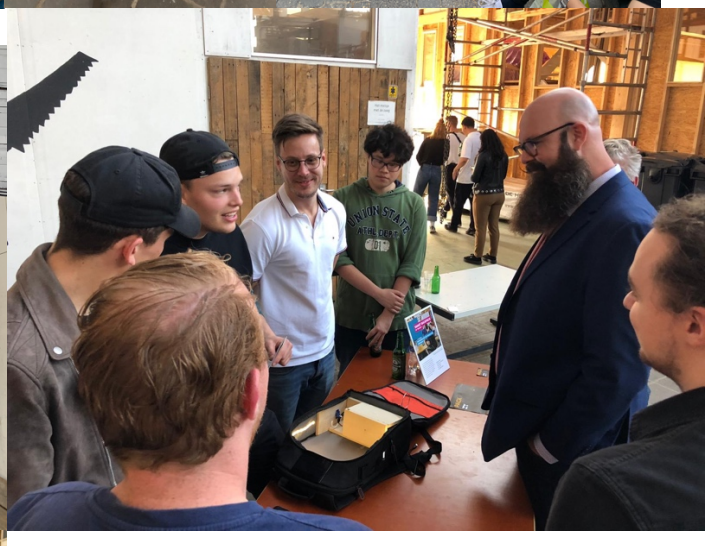




Day 9.

This day was mostly dedicated to the expo, but before the whole Expo would have started we had couple hours to spend on the finishing touched with the Concept, presentation. Our group had a really good time management, and because of that we were ready to present our Wearable to the public almost two hours before the expo, but we still used the time, to set everything perfectly up, and talk about who should present, and in what order.
As the expo came we were ready with everything, just in the last moments the OLED display arrived with our solar panel, so we could attach everything and wait for the visitors to arrive. Before that could happen we had a huge “pizza session”, and after that Expo kicked off at 16.00.

The Expo was four hours long, most of the time I was presenting our concept, but I got some break when Geert, Quinten and Ping took over it. The most satisfying part for me was that I was the main presenter, and I managed to do it in a way that people seemed to appreciate it in the same time. But took also part on the preparation as well.



Reflection

I’m really happy with the end product what we achieved. During the process I was a bit skeptical about how well we choose our wearable but in the end everything worked out perfectly. We made a nice presentations during the expo and we almost only got good feedback on our product. Couple people even asked when it’s going to be available for retail purchase, but for now we are not planning to kickstart it, although we have created the branding and logo to Packzy.

The quality of our product is good, it’s just a prototype but the parts seem pretty solid, so even when we tried to open the lock by force but the lock didn’t break at all. Other parts of the backpack were not as compact for example the logo was only placed on the bag by double sided tape. This made the bag appear that we made everything even the bag itself, but sadly after couple hours the glue didn’t hold any longer, so it had to be changed. Other parts were fine, this is why review about the backpack is good.

Most of the time ,during these two weeks I worked with the group or on parts of the concept, mostly on the design work and handy works; didn’t really do much coding because on our team we had Geert, who wanted to create the codes.

I was pretty excited about this course and it fully met my expectations, we had to work hard, but in an open environment with CMD students who we haven’t really met before the course. This type of activities help a lot, to get smaller and bigger glances into designing in a team setting, which I really enjoyed.