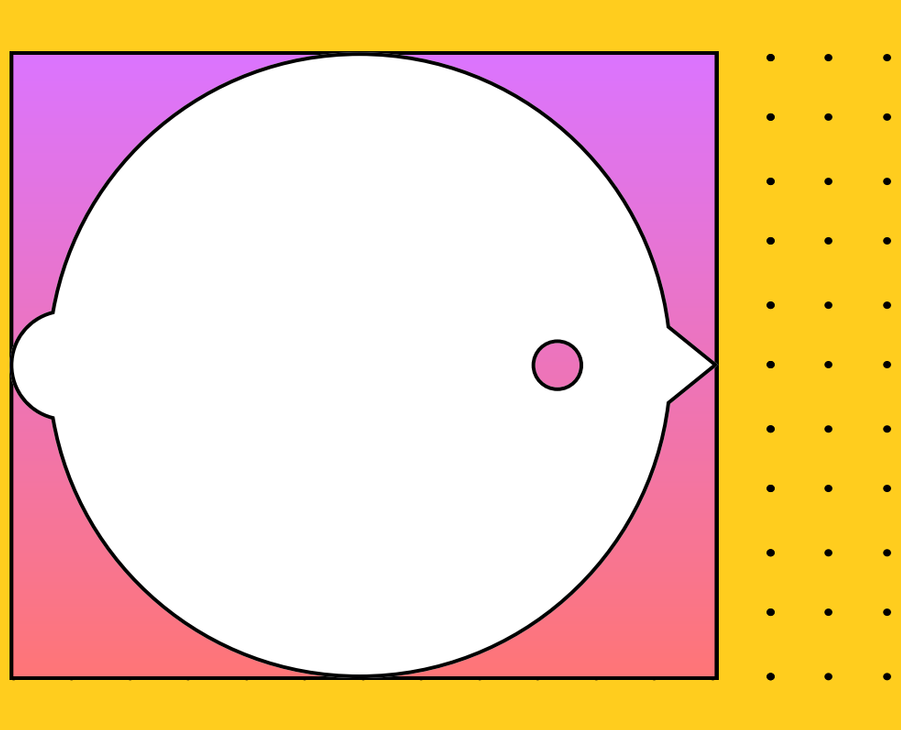
Empathy map



EA: Smart Home Experience Project (Group Project)

Empathy Map 1.0.0
11052022
Group 3

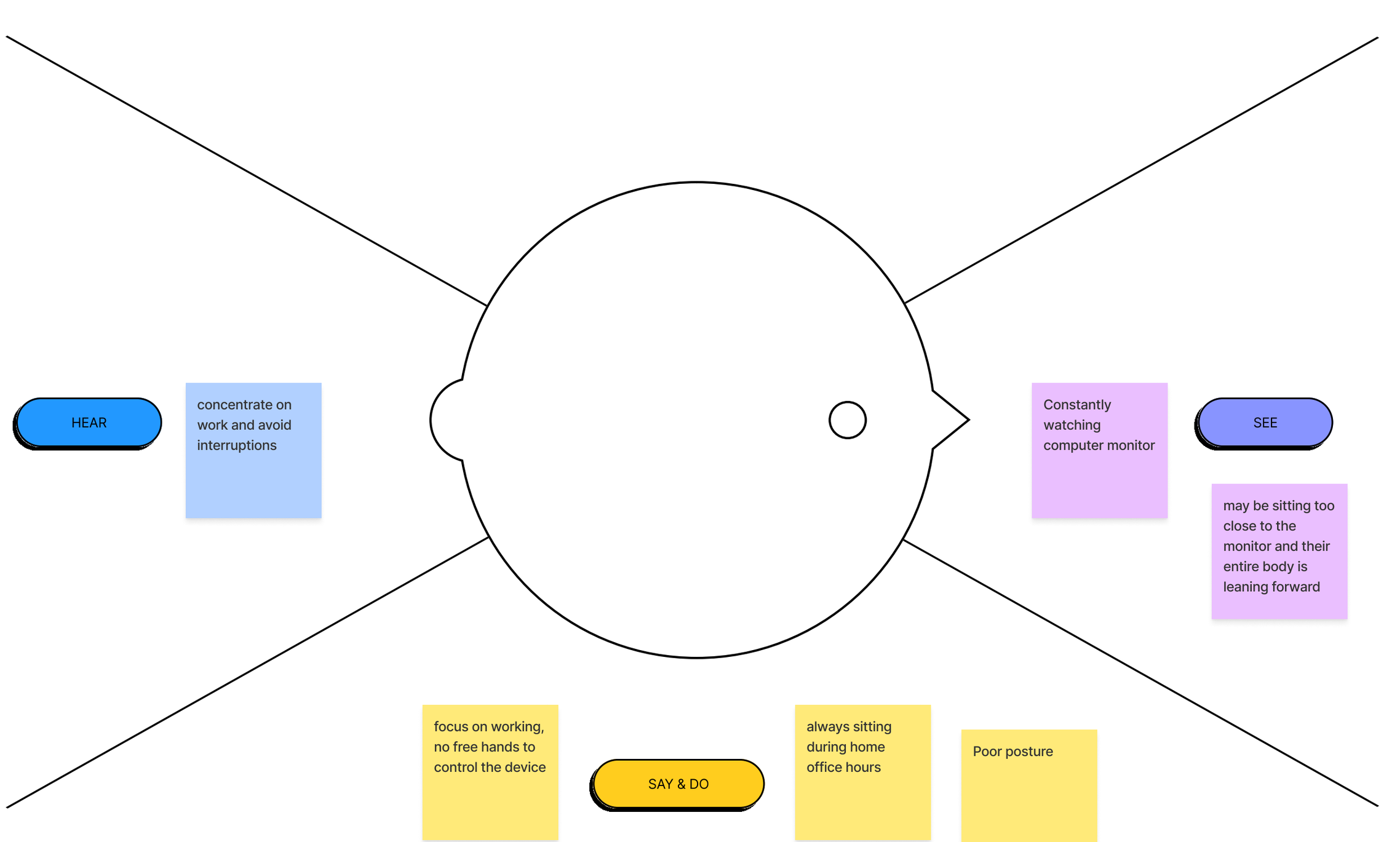
Start Here

1: Establish Focus and Goals

Who is the person for the map?
Home office worker

2: Capture the Outside World

1. What does she SEE?
2. What does she DO and SAY?
3. What does she HEAR?


HEAR
concentrate on work and avoid interruptions
SEE
Constantly watching computer monitor
may be sitting too close to the monitor and their entire body is leaning forward
SAY & DO
focus on working, no free hands to control the device
always sitting during home office hours
Poor posture

3: Explore Inside the Mind

What does she THINK and FEEL?

THINK & FEEL

Frustrated

Always worried

Unhealthy

I have to check my health

Not knowing how to be healthier at work

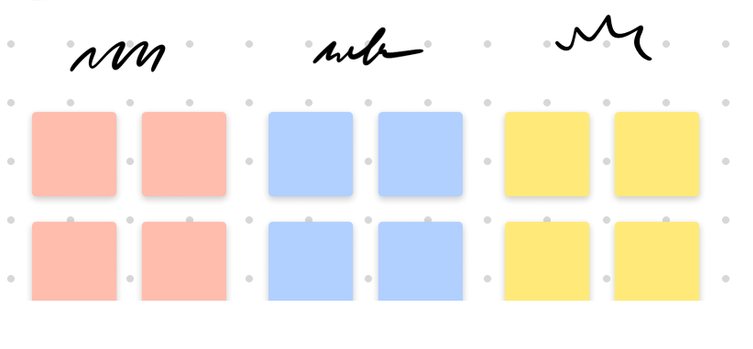
May worry about sub-health problems, but there is no way to deal with them

Hope someone always gives me advice/ reminds me on how to be healthier at work

Problem Definition

LAU Ka Pui		CHEUNG Ka Hei		YUE Pok Man	
Home office workers care about health in home office work	Sedentary, poor posture, poor quality of sitting	The device automatically maintains the environment when the user is away	Facilitate users when they have no time to spare	need to find the work life balance, Track the working time.	Don't want to be disturbed after work time.

Brainstorm



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Brainstorm 1.0.0
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LAU Ka Pui		
Observe the quality of sitting posture	A Smart Chair helps sedentary, poor posture and sitting quality with Infrared Sensor, Temperature Sensor, Humidity Sensor and Stepper Motor Fans	Avoid physical switches for people with disabilities by Home app with Siri
Provide health advice on web by training ML model		For those who care about health at work in the home office
Track their real-time data on the Home app	Save their usage data in a database and provide historical visualizations on the web	Turn on/off the internal fans of the Smart Chair

CHEUNG Ka Hei		
Automatic HomeKit	Smart dehumidifier adjusts with humidity automatically	Smart curtain adjusts with Siri
Smart security cameras, notify user if suspicious behaviour is detected	Facial recognition controls the door	Air conditioner, switch on when detecting human and high temperature
Design for people with disabilities	Design for the home office worker	Reduce the need for the user to control the device

YUE Pok Man		
Weight sensor to detect sitting	Ring to tell user are sitting too long	A red light to warn for sitting too long
Connect with iOS do not disturb, focus mode	Sitting time per day report	Detect if you are sit straight or not
Website and app tracking	Can be used both at office or home	Can be portable and put on every chair

Smart Chair

COURSEWORK	EA: Smart Home Experience Project (Group Project)
DOCUMENT	Concept Board
AUTHOR(S)	LAU Ka Pui, CHEUNG Ka Hei, YUE Pok Man
VERSION	1.0.0 14052022

Target User:

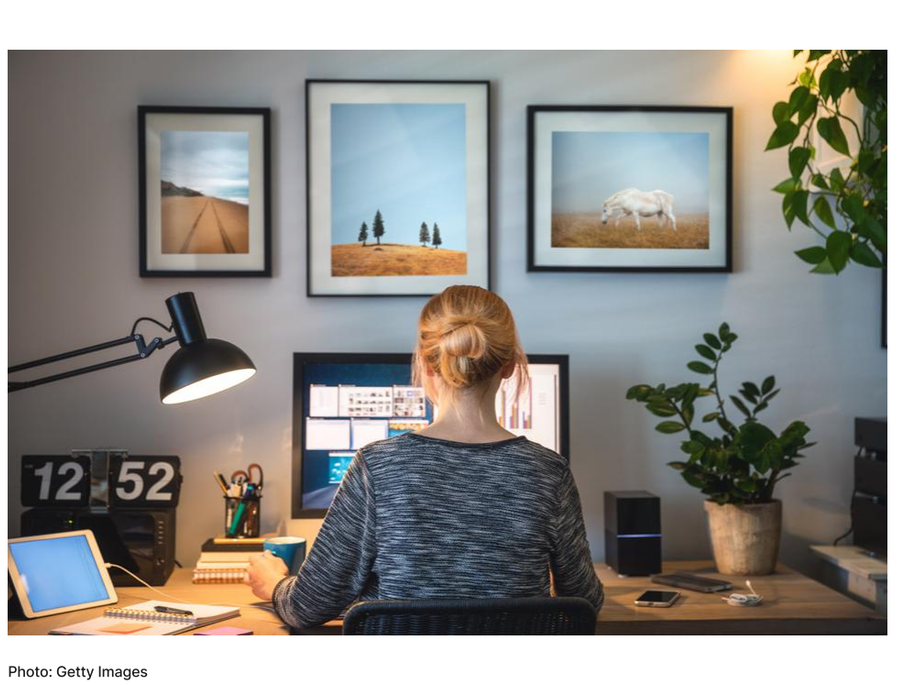


Photo: Getty Images

Home Office Worker

Problem Definition

Health Problems

Physical inactivity a leading cause of disease and disability, warns WHO

Sedentary lifestyles increase all causes of mortality, double the risk of cardiovascular diseases, diabetes, and obesity, and increase the risks of colon cancer, high blood pressure, osteoporosis, lipid disorders, depression and anxiety.

According to WHO, 60 to 85% of people in the world —from both developed and developing countries—lead sedentary lifestyles, making it one of the more serious yet insufficiently addressed public health problems of our time. It is estimated that nearly two-thirds of children are also insufficiently active, with serious implications for their future health.

World Health Organization. (4 April 2002). Physical inactivity a leading cause of disease and disability, warns WHO. Departmental news. [Online]

Posture

- The complications of poor posture include back pain, spinal dysfunction, joint degeneration, rounded shoulders and a potbelly.
- Suggestions to improve your posture include regular exercise and stretching, ergonomic furniture and paying attention to the way your body feels.

Department of Health, State Government of Victoria, Australia. (31 August 2015). Posture. Better Health Channel. [Online]

SurfUpVector, iStock

Home office workers care about health in home office work	Sedentary, poor posture, poor quality of sitting	The device automatically maintains the environment when the user is away	Facilitate users when they have no time to spare	need to find the work life balance, Track the working time.	Don't want to be disturbed after work time.

Concepts

For those who care about health at work in the home office

Design for the home office worker

Gispen Bureaustoel Zinn Smart 20

Design for people with disabilities

Can be used both at office or home

Can be portable and put on every chair

Avoid physical switches for people with disabilities by Home app with Siri

Reduce the need for the user to control the device

Source: reichelt.com

Infrared sensor to detect sitting

Automatic HomeKit

Connect with iOS do not disturb, focus mode

Source: aircanada.com

Observe the quality of sitting posture

Detect if you are sit straight or not

Ring to tell user are sitting too long

A red light to warn for sitting too long

Turn on/off the internal fans of the Smart Chair

Gree FXDZ-20X62Bg3 Air Circulation Fan

Save their usage data in a database and provide historical visualizations on the web

Track their real-time data on the Home app

Website and app tracking

Sitting time per day report

Provide health advice on web by training ML model

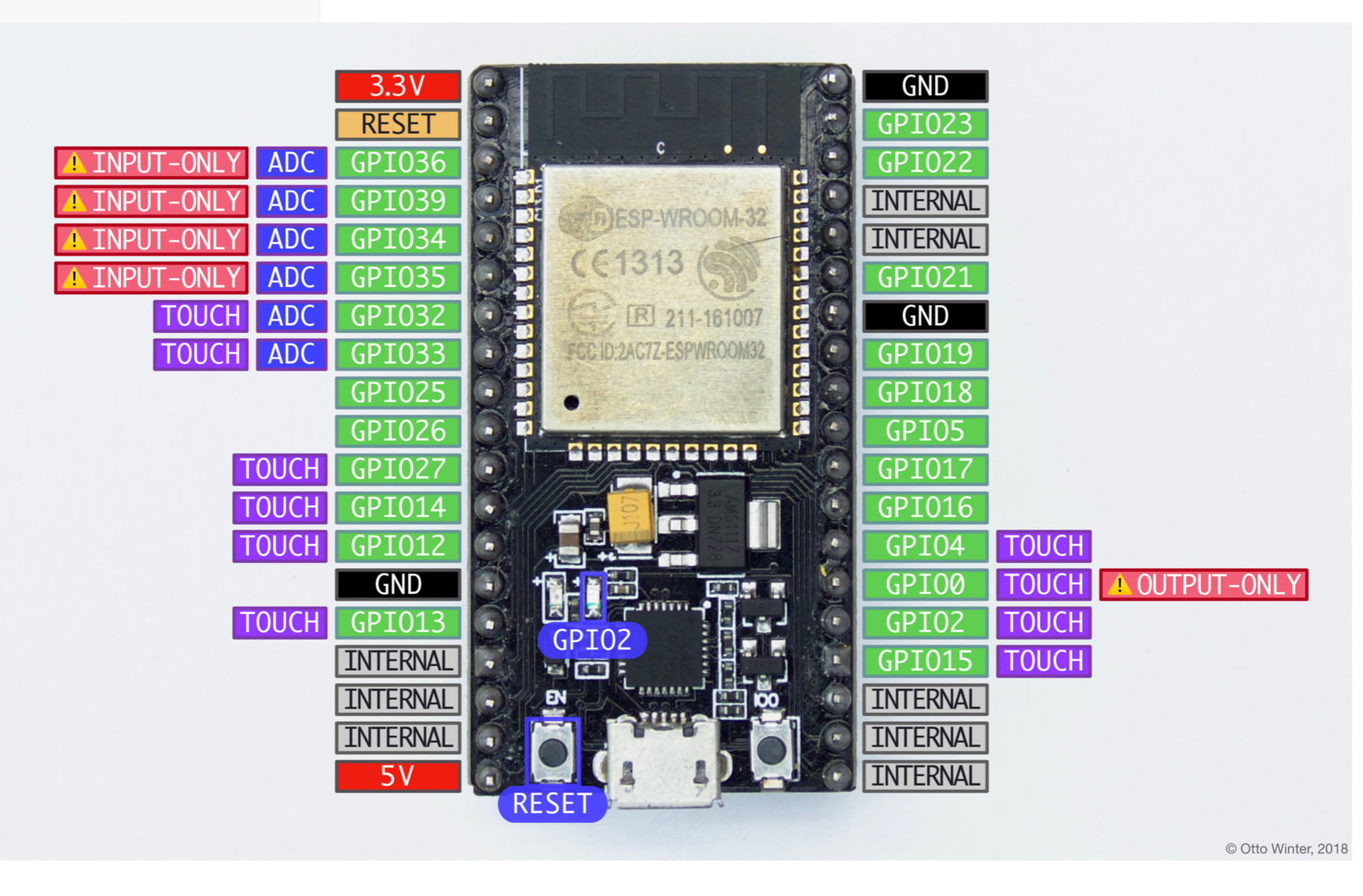
Inbox Zero Office Chair Adjustable Height Recliner With Retractable Footrest

A Smart Chair helps sedentary, poor posture and sitting quality with Infrared Sensor, Temperature Sensor, Humidity Sensor and Stepper Motor Fans

Storyset, Freepik

Design

Circuits


3.3V
RESET
INPUT-ONLY ADC GPIO36
INPUT-ONLY ADC GPIO39
INPUT-ONLY ADC GPIO34
INPUT-ONLY ADC GPIO35
TOUCH ADC GPIO32
TOUCH ADC GPIO33
GPIO25
GPIO26
TOUCH GPIO27
TOUCH GPIO14
TOUCH GPIO12
GND
TOUCH GPIO13
INTERNAL
INTERNAL
INTERNAL
5V
GND
GPIO23
GPIO22
INTERNAL
INTERNAL
GPIO21
GND
GPIO19
GPIO18
GPIO5
GPIO17
GPIO16
GPIO4 TOUCH
GPIO0 TOUCH OUTPUT-ONLY
GPIO2 TOUCH
GPIO15 TOUCH
INTERNAL
INTERNAL
INTERNAL
GPIO2
EN
RESET

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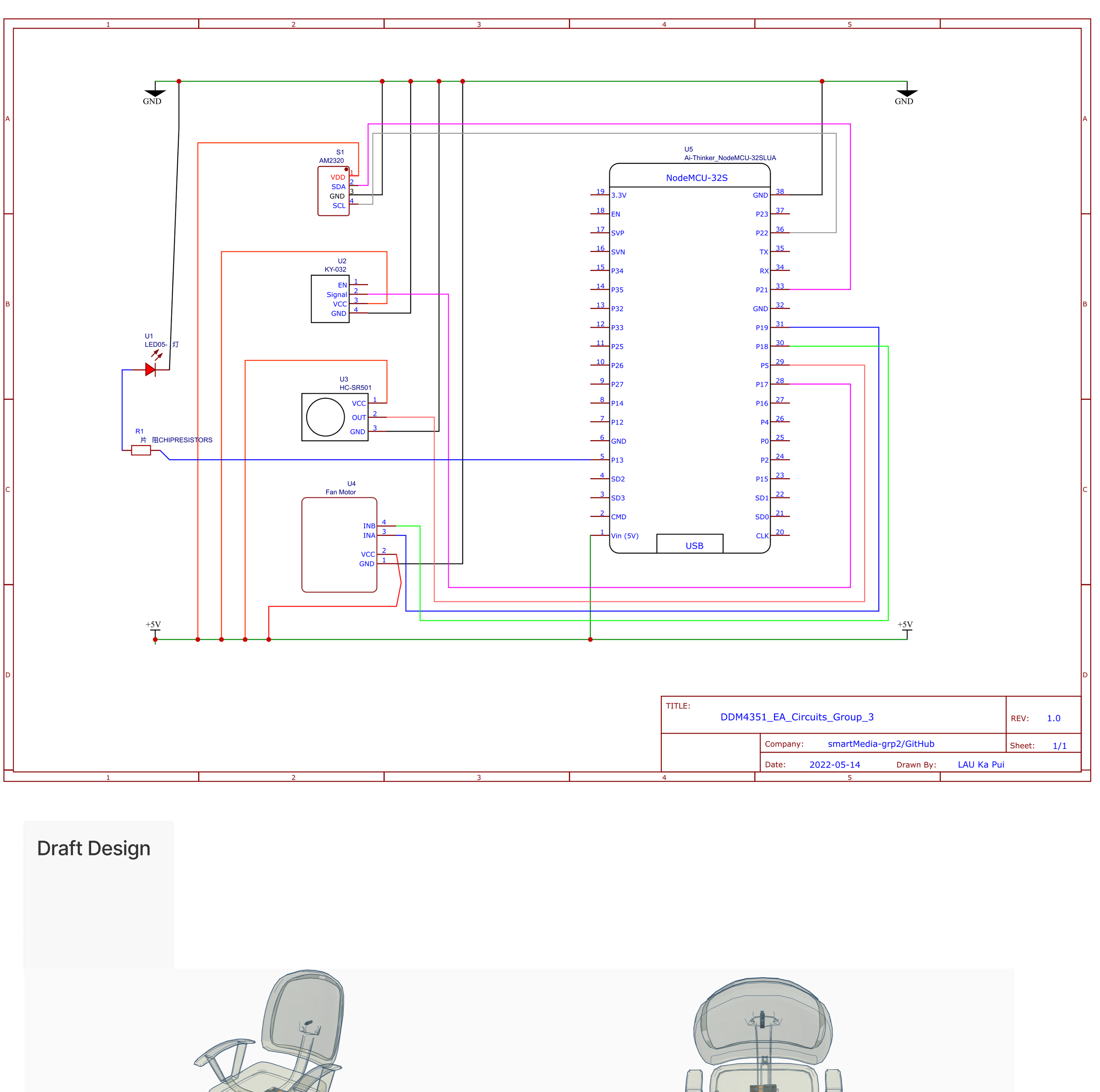
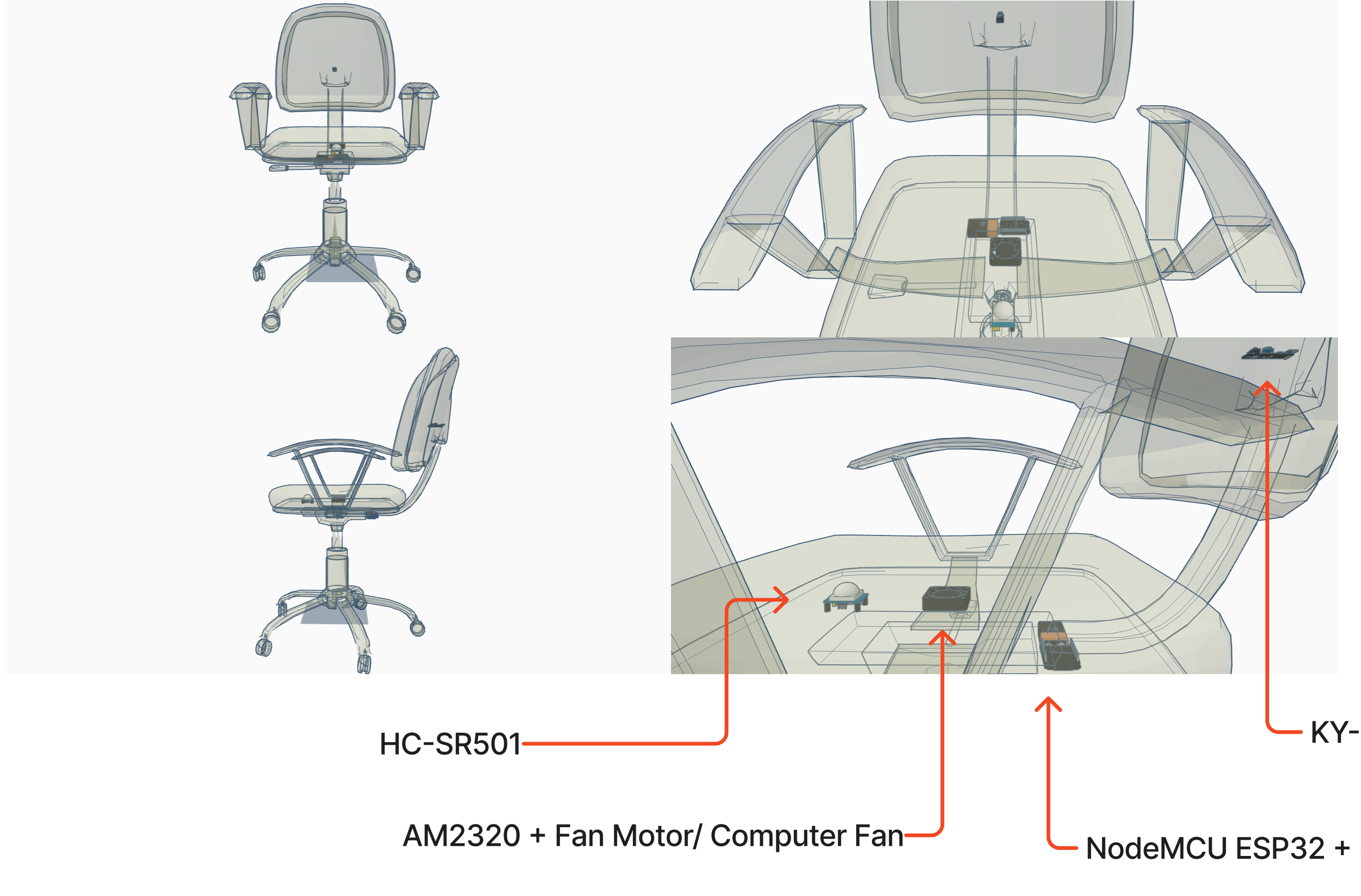
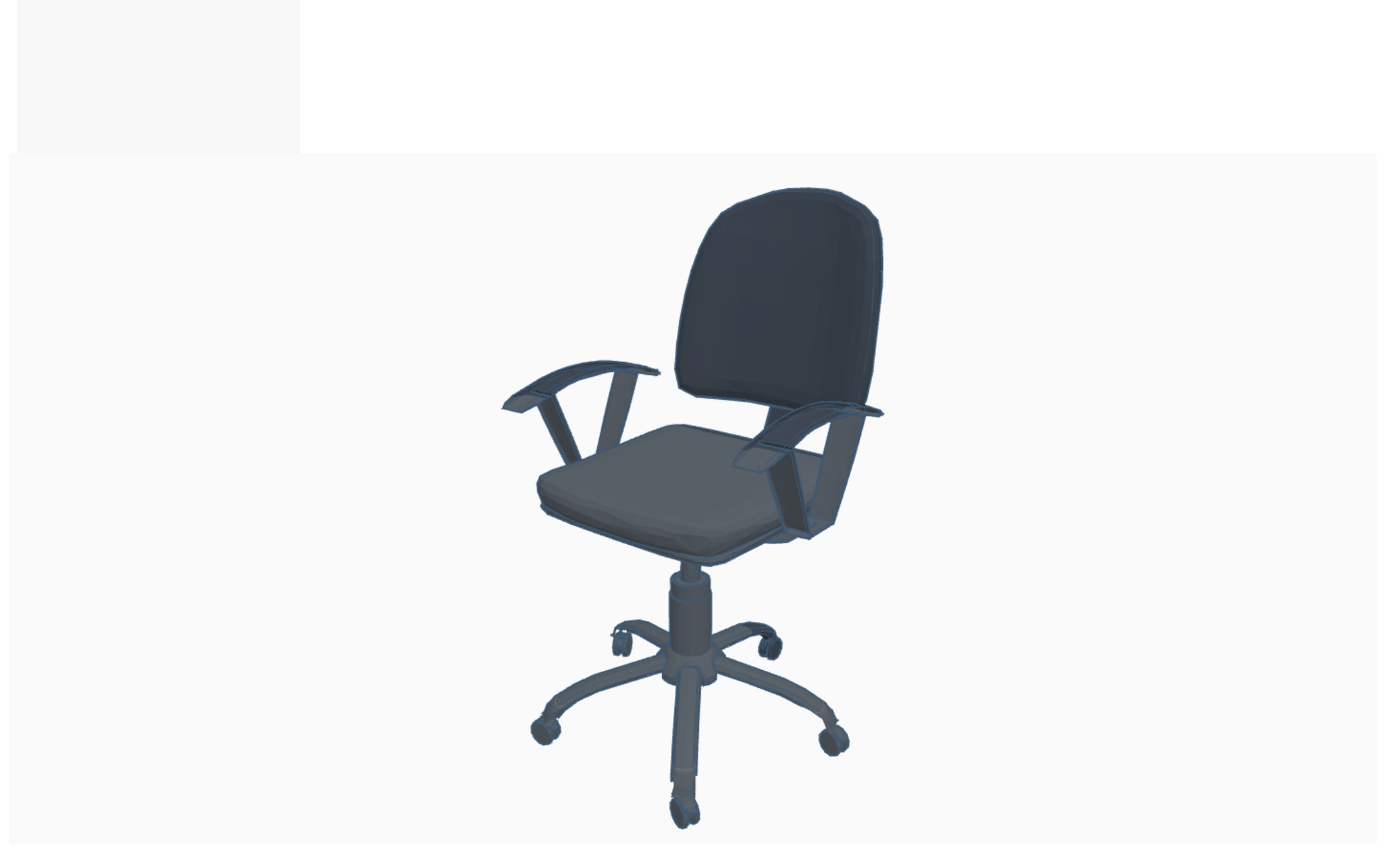

GND
S1
AM2320
VDD
SDA
GND
SCL
U2
KY-032
EN
Signal
VCC
GND
U1
LED05-
R1
R
CHIPRESISTORS
U3
HC-SR501
VCC
OUT
GND
U4
Fan Motor
INB
INA
VCC
GND
+5V
U5
Ai-Thinker_NodeMCU-32SLUA
NodeMCU-32S
3.3V
EN
SVP
SVN
P34
P35
P32
P33
P25
P26
P27
P14
P12
GND
P13
SD2
SD3
CMD
Vin (5V)
USB
GND
P23
P22
TX
RX
P21
GND
P19
P18
P5
P17
P16
P4
P0
P2
P15
SD1
SD0
CLK
TITLE:
DDM4351_EA_Circuits_Group_3
REV: 1.0
Company: smartMedia-grp2/GitHub
Sheet: 1/1
Date: 2022-05-14
Drawn By: LAU Ka Pui

Draft Design


HC-SR501
KY-032
AM2320 + Fan Motor/ Computer Fan
NodeMCU ESP32 + 5V Battery

Final Design



Outcomes

People working from home can now learn more about how to improve their health while working from home	It helps people with sedentary problems, correct poor posture and improves the quality of sitting	Maintain the environment automatically	Bring convenient, through Siri to control smart devices when users busy with work	People can focuse on the work while having a healthier gesture	Letting the chairs connect and communicate with the whole smart living environment system when working from home