Sweeper Keeper

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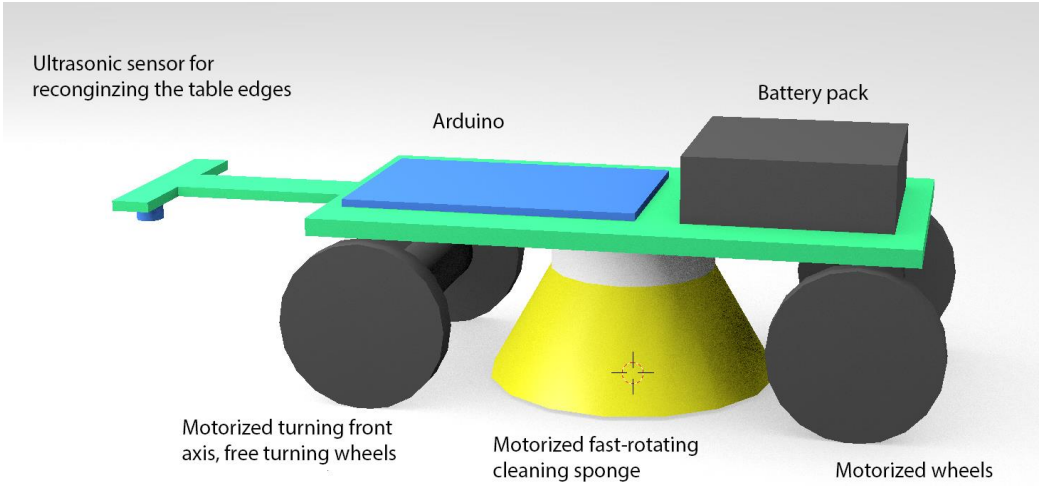
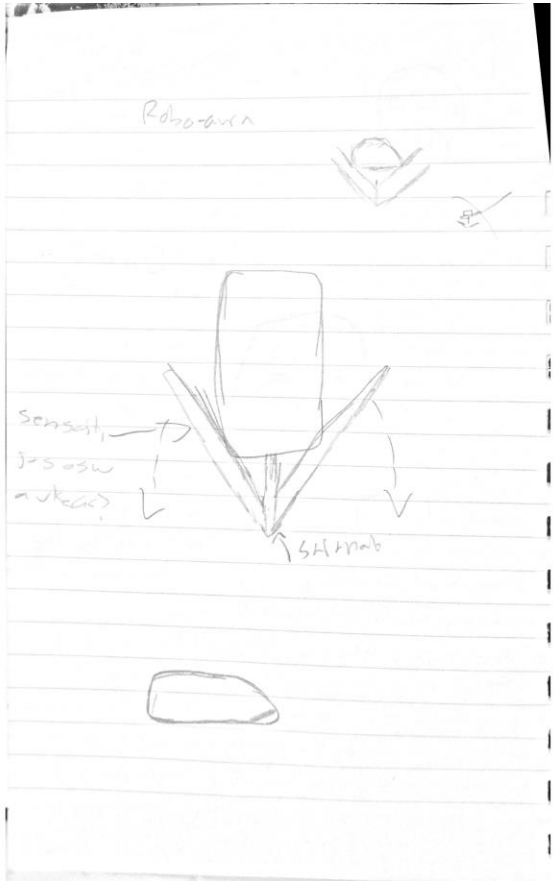
Funny coincidence

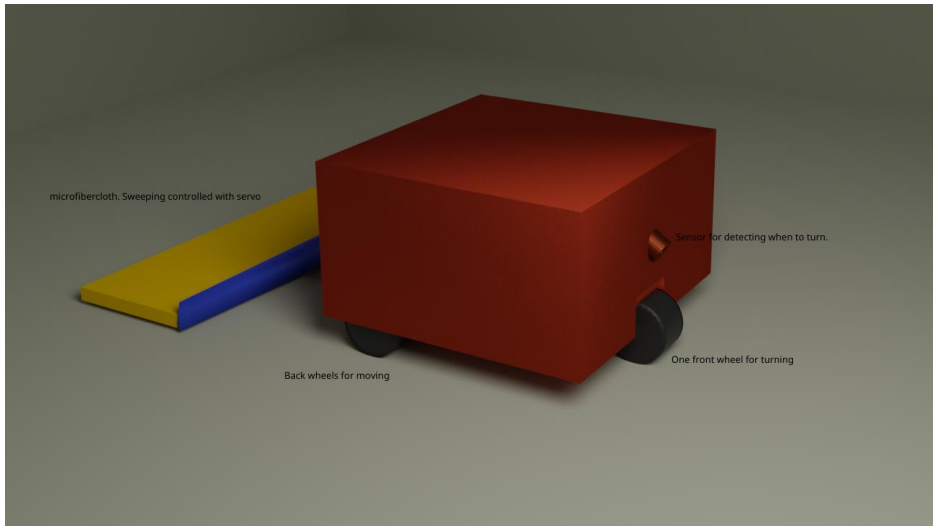
- Few days ago Finnish Youtuber, Roni Back, published a video where he also made a table cleaning robot
- And it kind of looked like our first week design :D
- Hopefully our creation will be better than Roni's

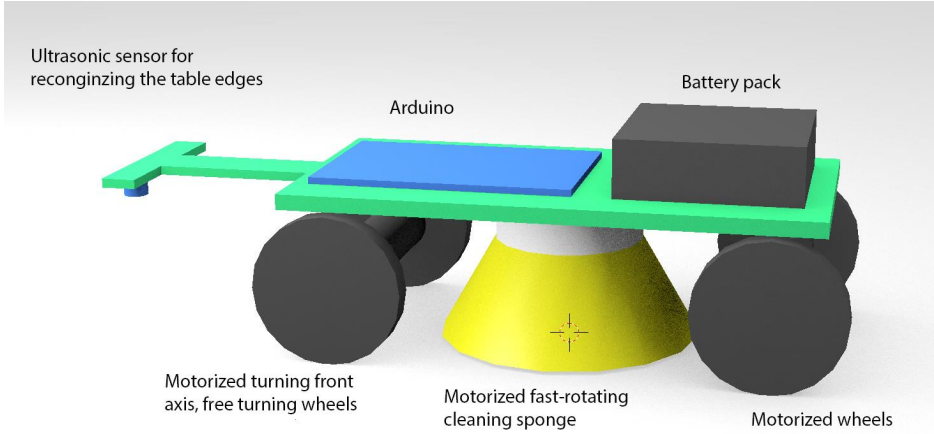


https://www.youtube.com/watch?v=Xj1uGa3eiXA

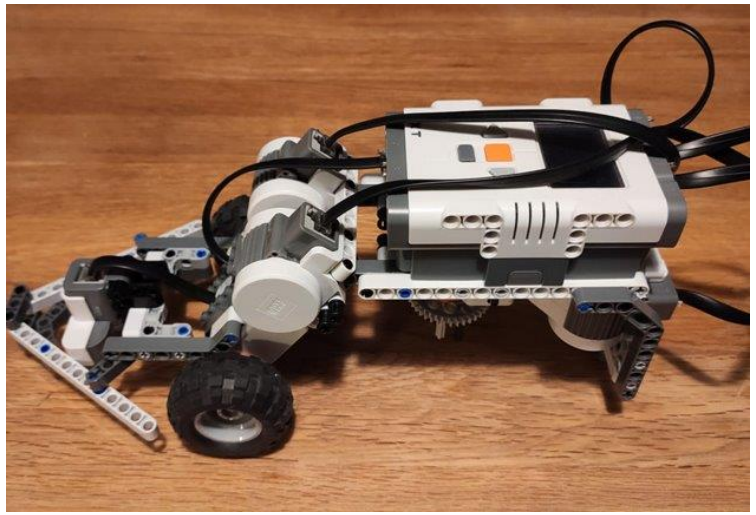
The Evolution

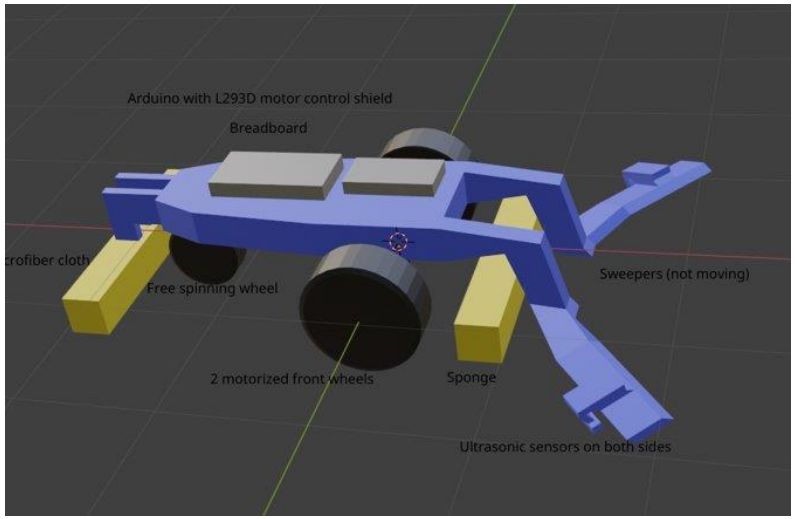


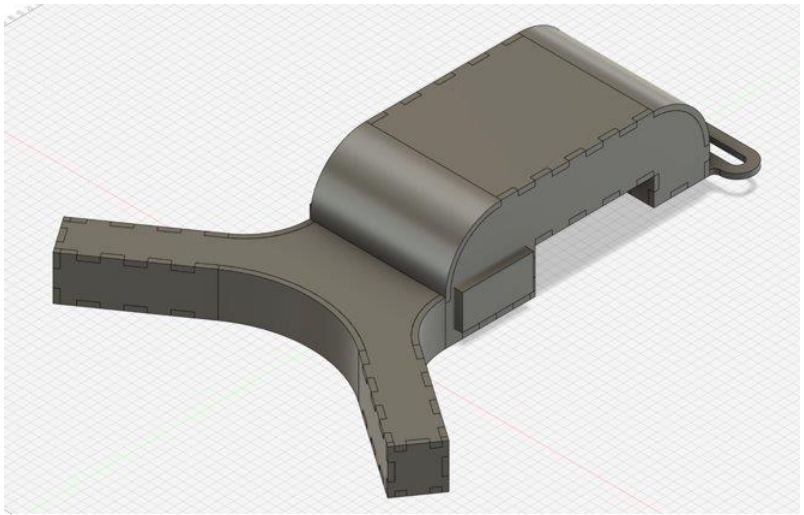




The Evolution

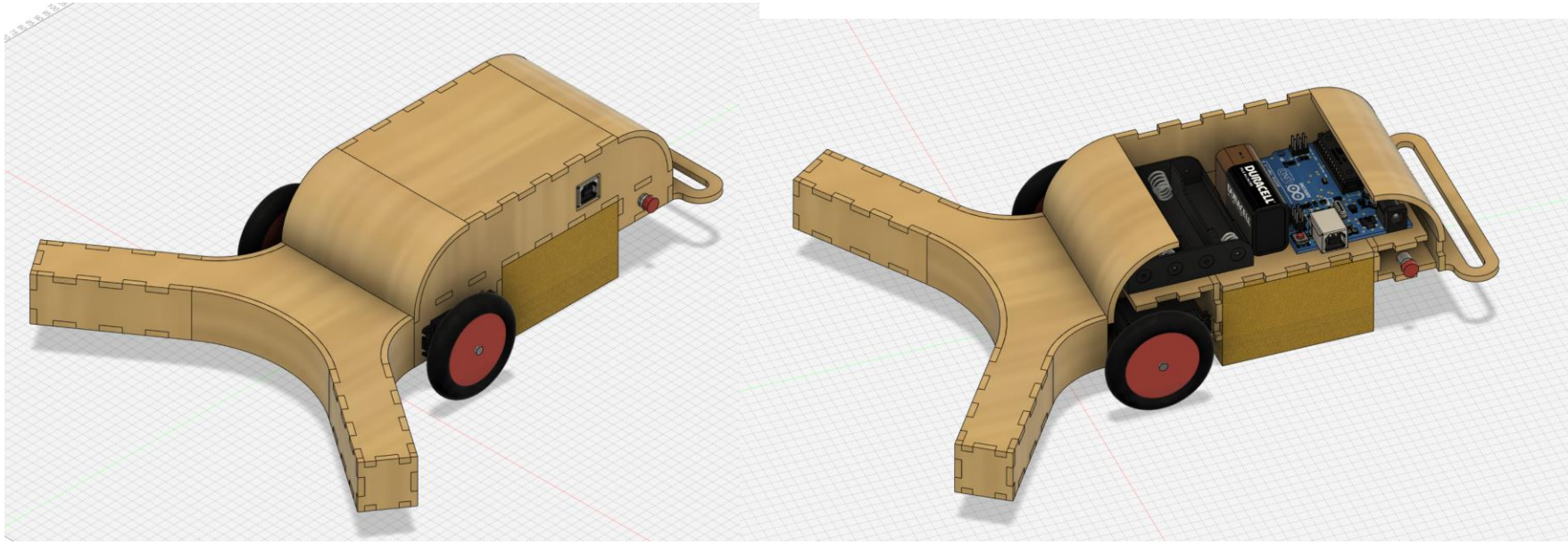


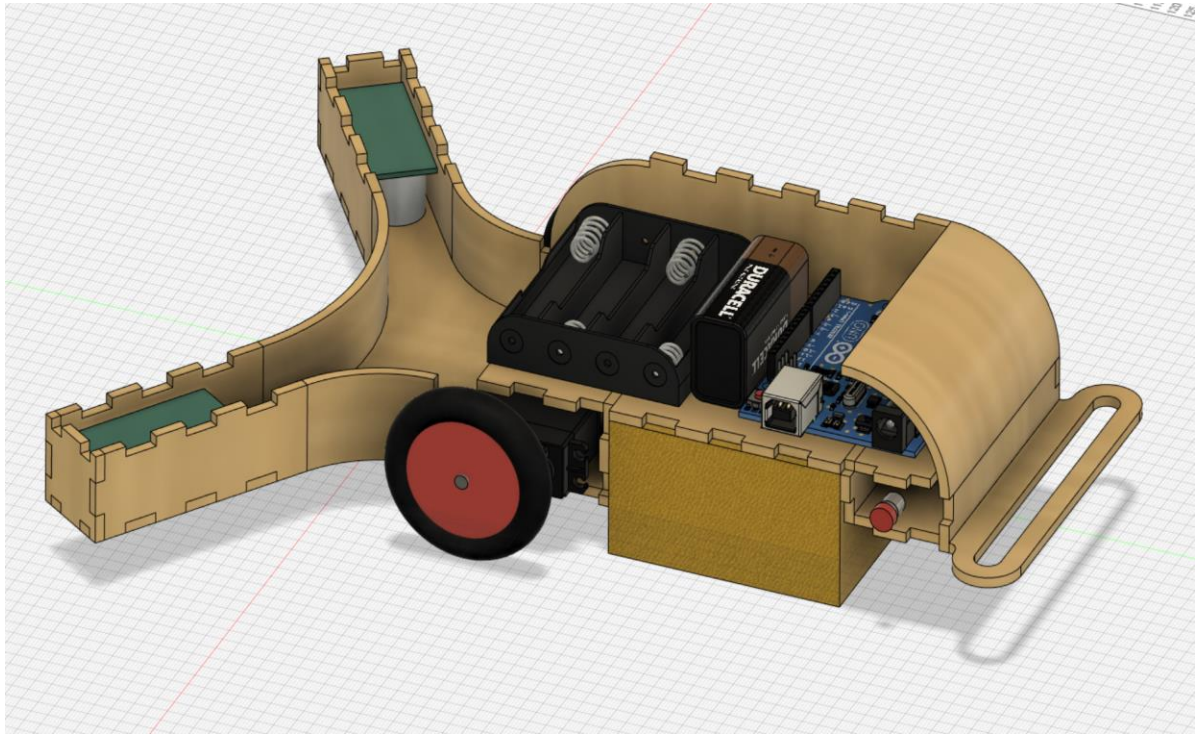




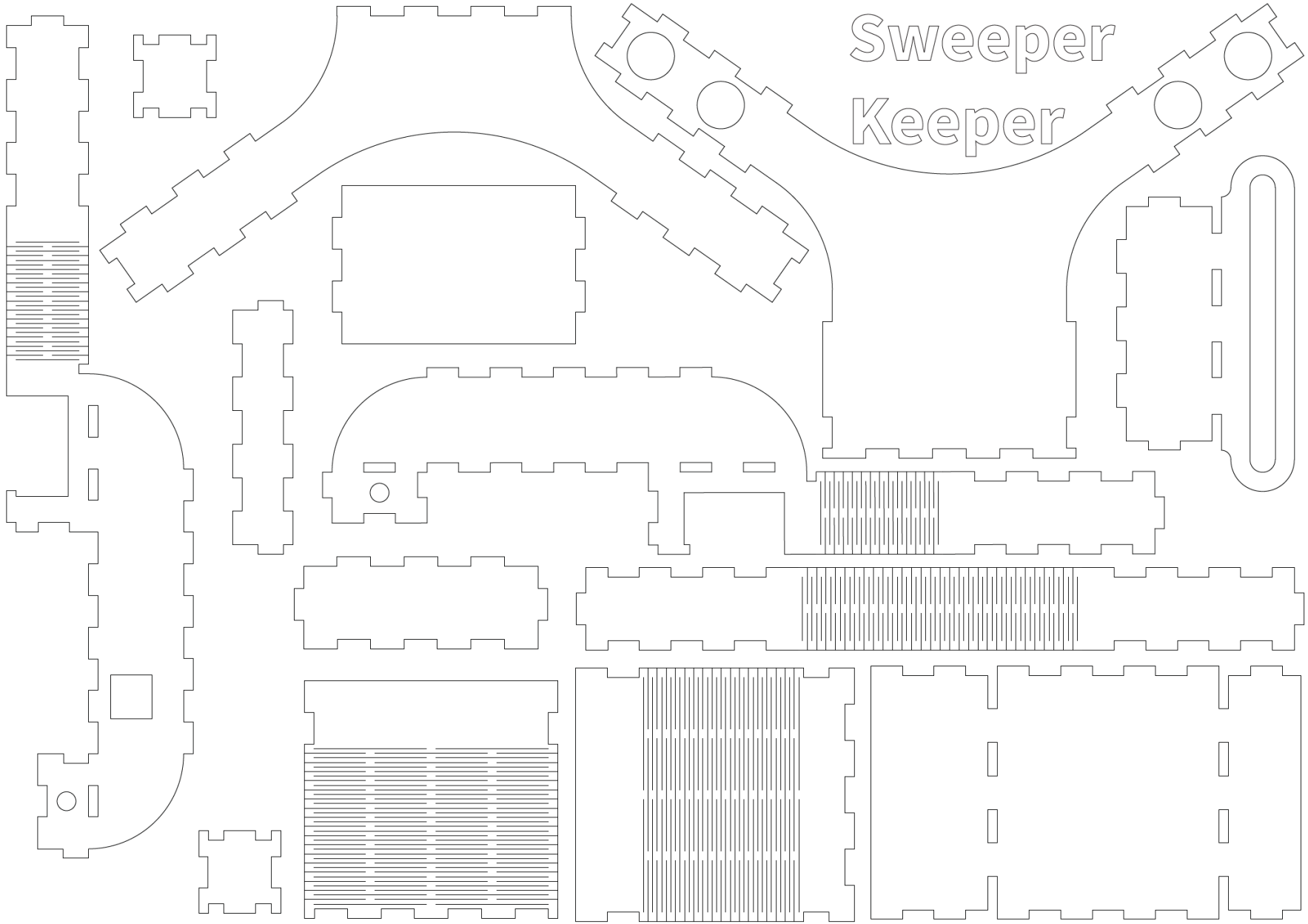
Final design

- We think it will look good with laser cutter burn marks.

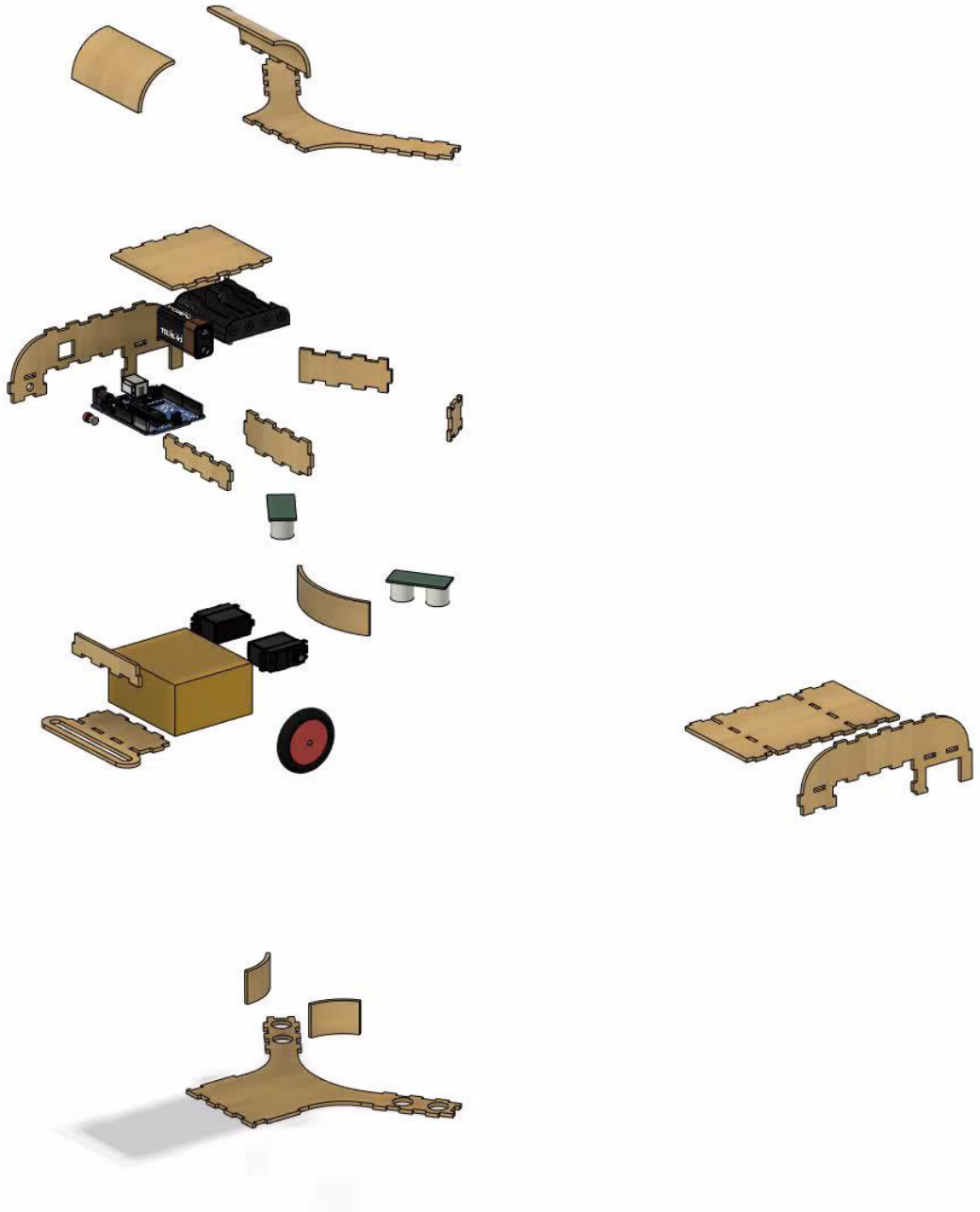




Laser cutting drawings



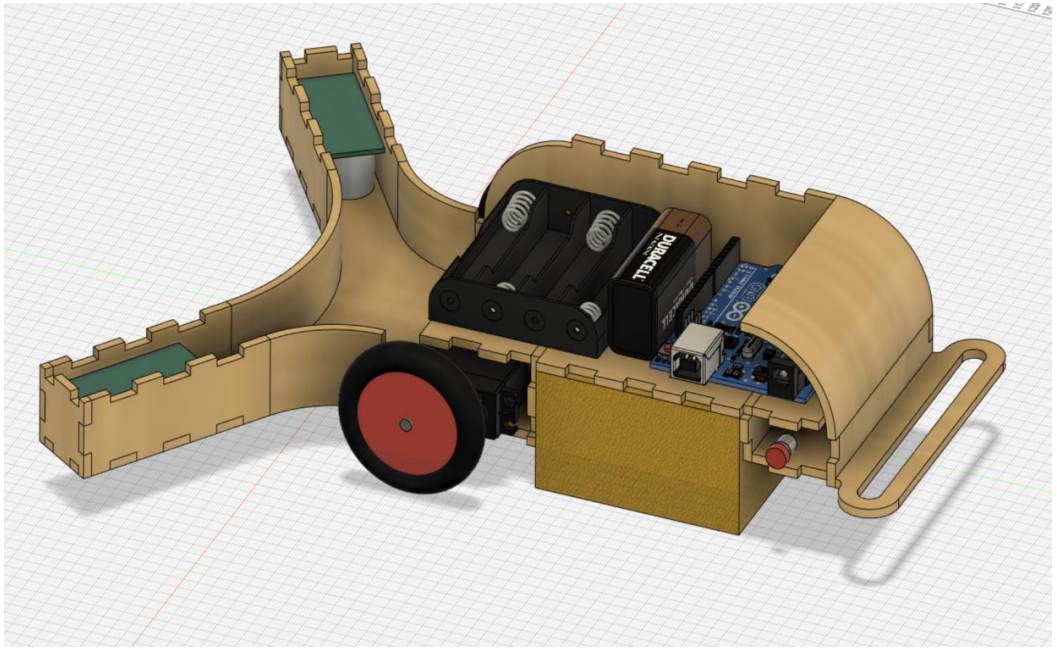
Animation



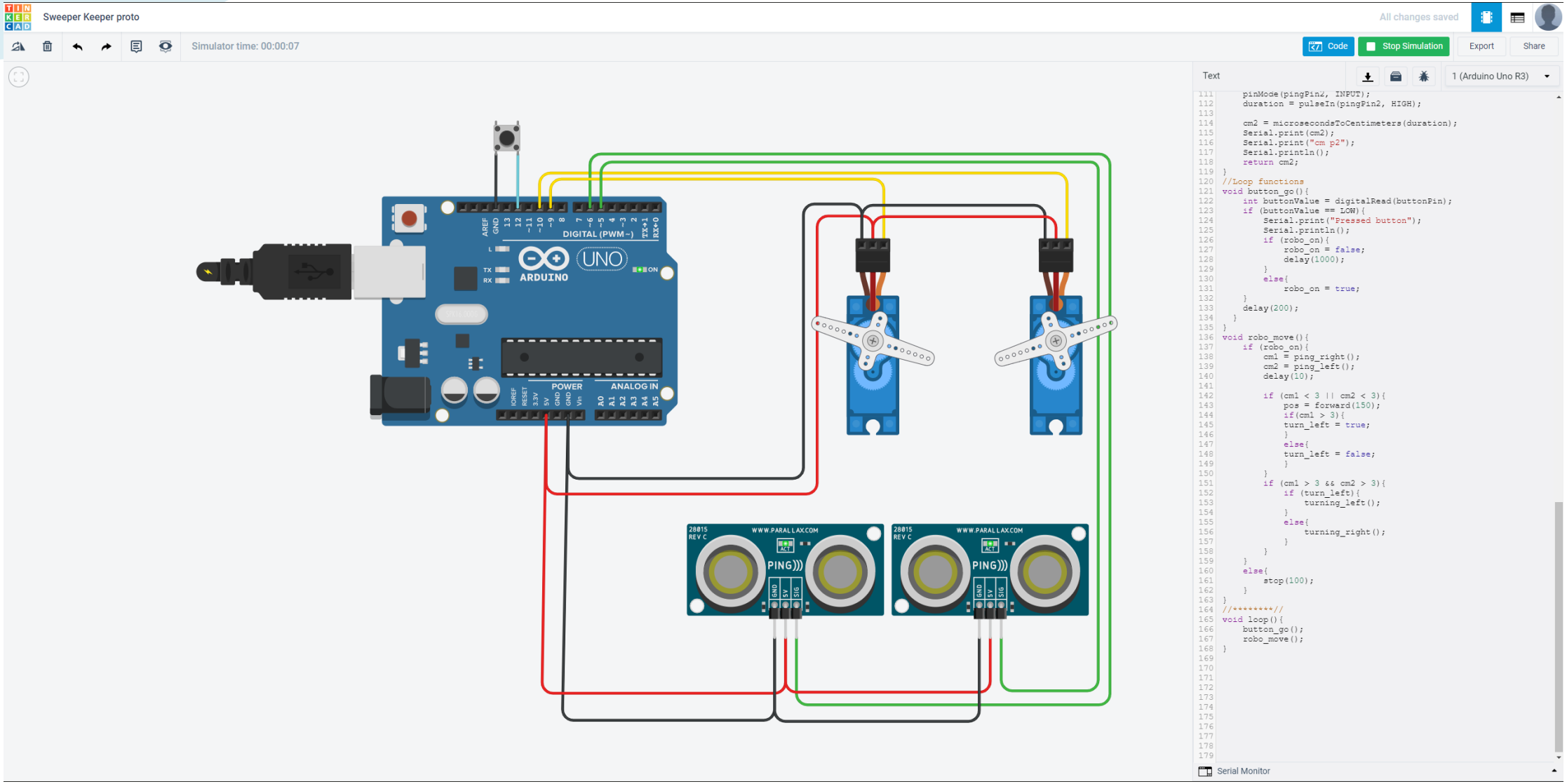
Cardboard proto

Bill of materials

- Arduino Uno
- SM-S3317SR Continuous Rotation Servo x 2
- HC-SR04 Ultrasonic sensor x 2
- 9V battery (for electronics)
- AA batteries x4 (for servos)
- AA battery-holder
- Momentary button
- MDF
- Wheels: Sponge wheel 50mm air
- Kitchen sponge and small microfiber cloth



Tinkercad




```
    pinMode(pingPin2, INPUT);
    duration = pulseIn(pingPin2, HIGH);

    cm2 = microsecondsToCentimeters(duration);
    Serial.print(cm2);
    Serial.print("cm p2");
    Serial.println();
    return cm2;
}
//Loop functions
void button_go(){
    int buttonValue = digitalRead(buttonPin);
    if (buttonValue == LOW){
        Serial.print("Pressed button");
        Serial.println();
        if (robo_on){
            robo_on = false;
            delay(1000);
        }
        else{
            robo_on = true;
        }
    delay(200);
  }
}
void robo_move(){
    if (robo_on){
        cm1 = ping_right();
        cm2 = ping_left();
        delay(10);

        if (cm1 < 3 || cm2 < 3){
            pos = forward(150);
            if(cm1 > 3){
            turn_left = true;
            }
            else{
            turn_left = false;
            }
        }
        if (cm1 > 3 && cm2 > 3){
            if (turn_left){
                turning_left();
            }
            else{
                turning_right();
            }
        }
    }
    else{
        stop(100);
    }
}
//********//
void loop(){
    button_go();
    robo_move();
}
```

Main functions

- First we check if button is pressed
- Second we check if both sensors are detecting table
- We move based on detection
- If we find edge, we make two 90 degree turns.

```
121 void button_go(){
122         int buttonValue = digitalRead(buttonPin);
123         if (buttonValue == LOW){
124                 Serial.print("Pressed button");
125                 Serial.println();
126                 if (robo_on){
127                         robo_on = false;
128                         delay(1000);
129                 }
130                 else{
131                         robo_on = true;
132                 }
133                 delay(200);
134         }
135 }
```

```
136 void robo_move(){
137         if (robo_on){
138                 cm1 = ping_right();
139                 cm2 = ping_left();
140                 delay(10);
141                 if (cm1 < 3 || cm2 < 3){
142                         pos = forward(150);
143                         if(cm1 > 3){
144                                 turn_left = true;
145                         }
146                         else{
147                                 turn_left = false;
148                         }
149                 }
150                 if (cm1 > 3 && cm2 > 3){
151                         if (turn_left){
152                                 turning_left();
153                         }
154                         else{
155                                 turning_right();
156                         }
157                 }
158         }
159         else{
160                 stop(100);
161         }
162 }
```

```
void loop(){
        button_go();
        robo_move();
}
```

Documentation

- Github https://github.com/ppp2/DigiFab2020
- Tinkercad https://www.tinkercad.com/things/7d9ER2Wwvhb
- Blog posts https://www.digifab-oulu.com/tag/sweeper-keeper/