

Hello Ketty

Presentation

As technology develops and human civilisation advances, what will the pets of the future look like? Our project is based on a bold design conjecture of the pet cat of the future.

Inspiration

Hello Kitty was mainly inspired by electronic pets and the new cardboard pets that are popular among university students under the epidemic as our design prototype, combining them with cats to produce the robot cat design.

Final Project Video: <https://youtu.be/MQmaRLLfd4>

Journal link:<https://github.com/JasonGao818/Physical-Computing-Final/blob/main/Journal%20by%20Yujie%20Gao.pdf>

Github link:<https://github.com/JasonGao818/Physical-Computing-Final>

Team members: Yujie Gao, Pinsi Wang

Use of sensors

Input

- Ultrasound modules



- Photoresistors*2



Output

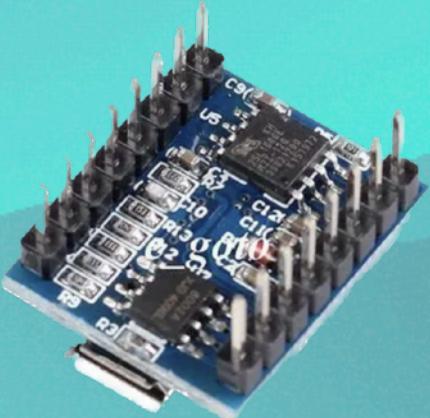
- Lamp*2



- Servo



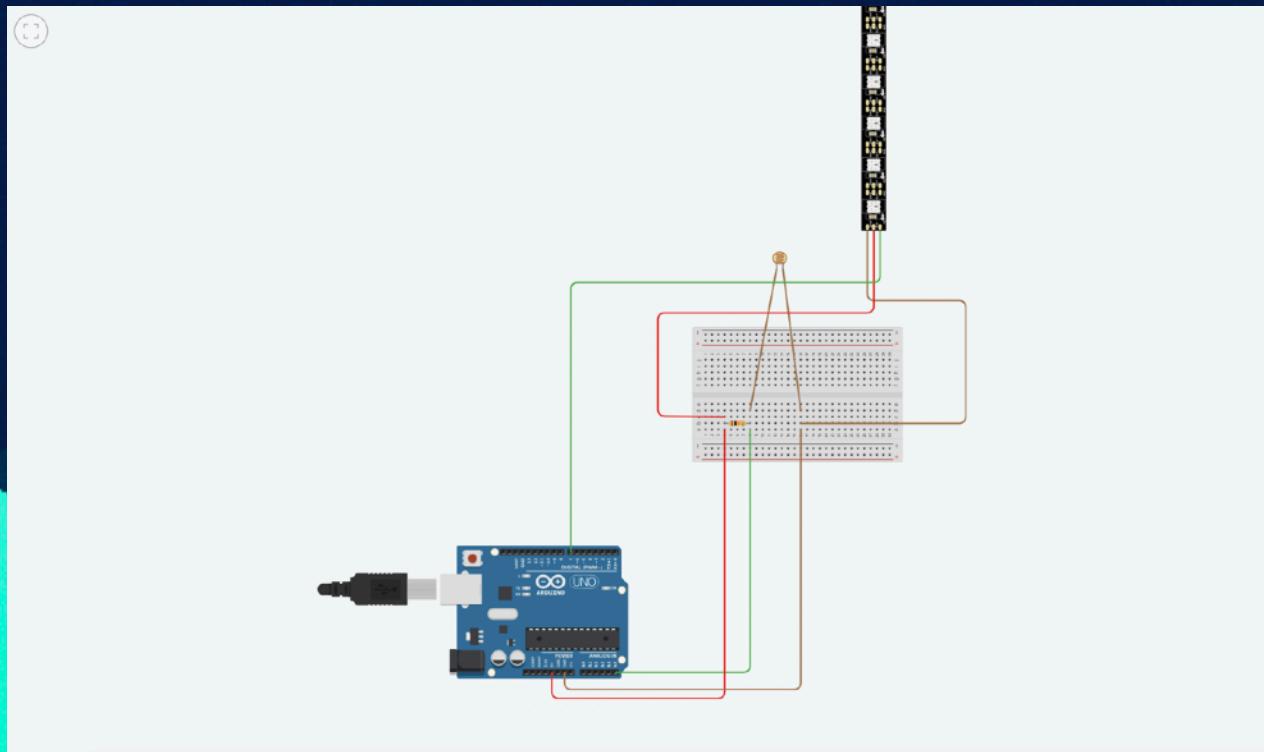
- Mp3 module



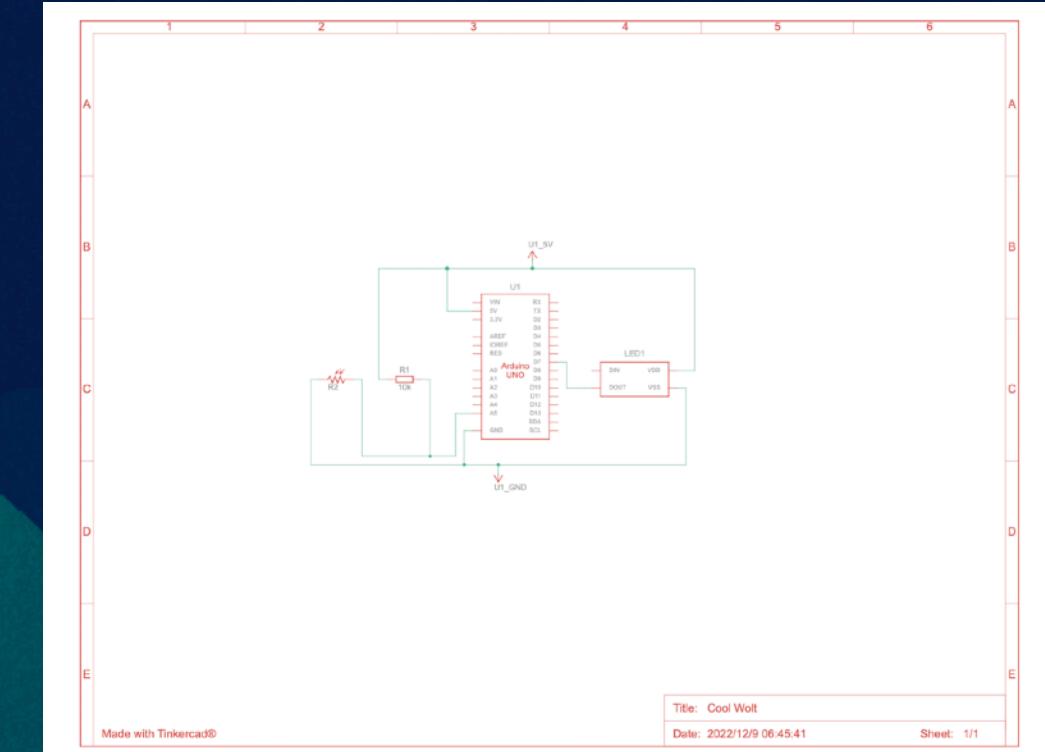
- RGBLight strips



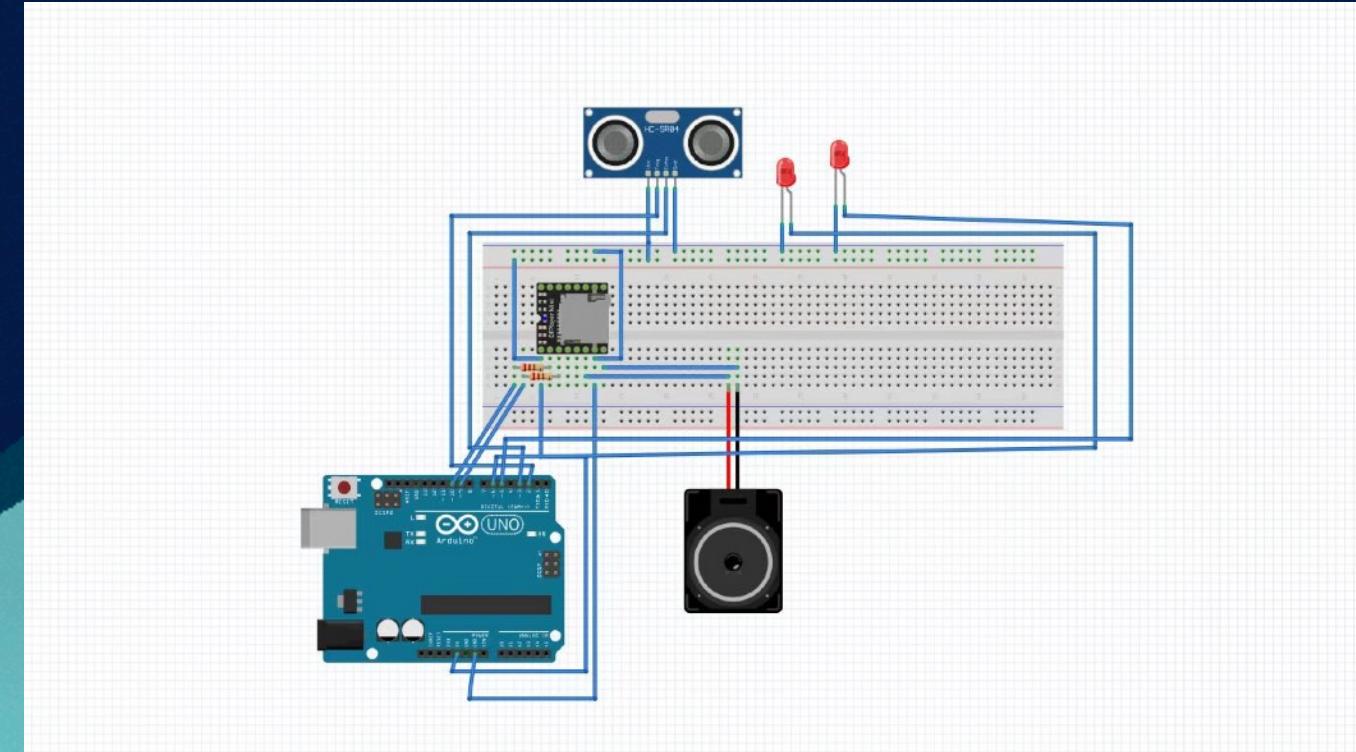
Circuit diagram and movement



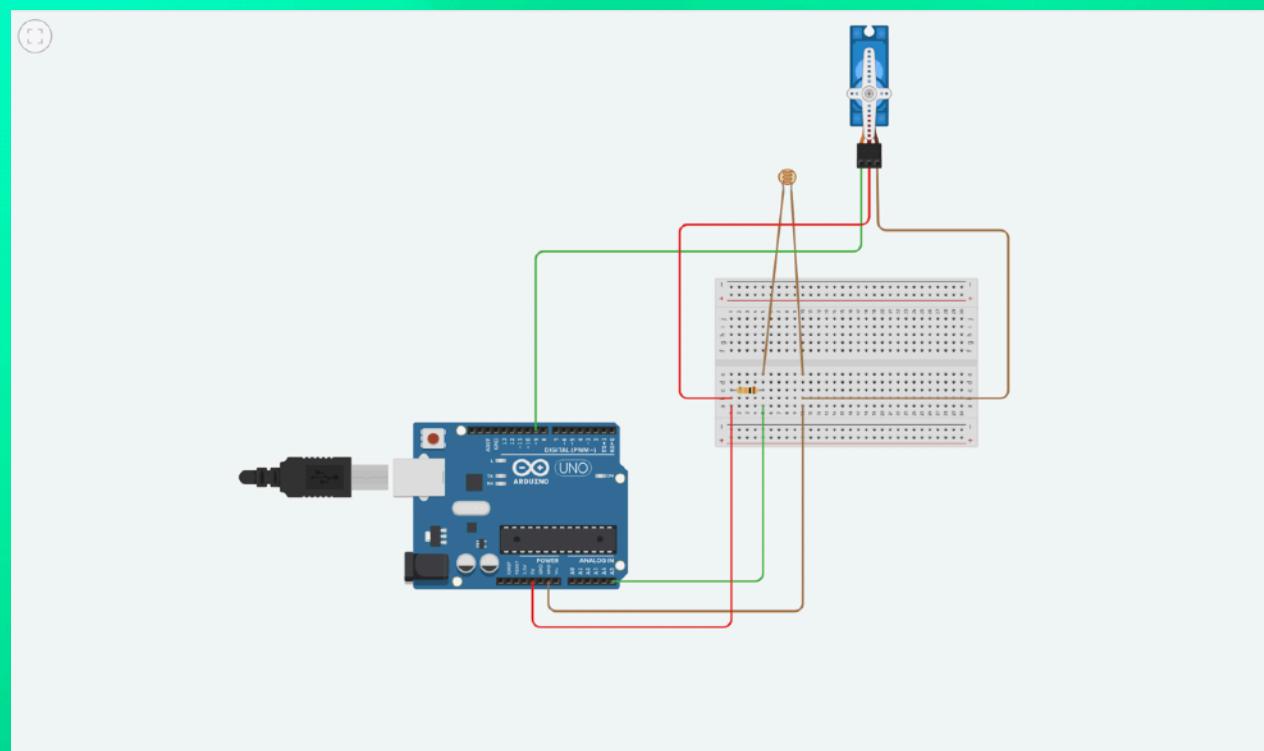
Wiring diagram for photo resistor controlled light bar



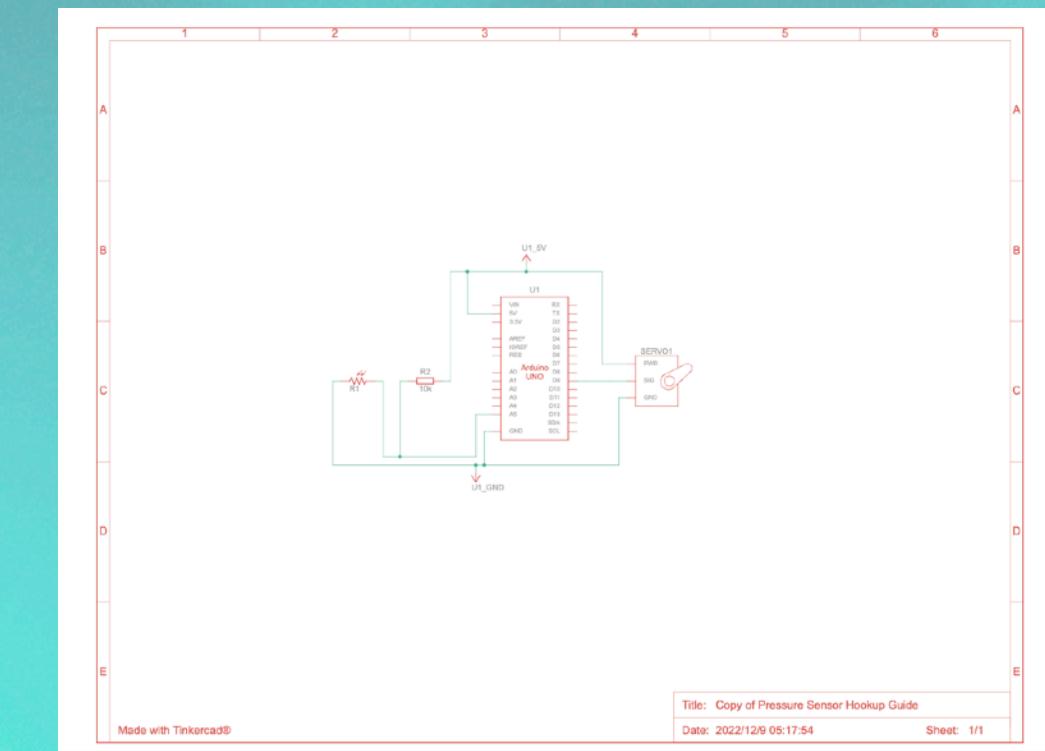
Diagrammatic view of a photoresistor controlled light bar



Ultrasonic module to control small lights and mp3 module wiring diagram



Wiring diagram for a photoresistor controlled servo



Illustrated view of a photoresistor controlled servo

When someone is within the range set by the ultrasonic sensor, the ultrasonic sensor transmits a signal to the Mp3 module and the light bulb, controlling the Mp3 module to play the song and the light bulb to keep the light on. When the photo resistor broadcasts that the light signal is weakening, it transmits the signal to the light bar and the servo, so that the light bar starts to cycle blue, green and red light flashes and the servo will start to rotate.

Group division

Pinsi Wang

Pinsi is responsible for the majority of manuscripts, sketches of models and a lot of manual work. The code part is responsible for the ultrasonic sensors connected to small light bulbs and photoresistors to control the rhythm of the light bars, as well as the design of the model scenes and the post-production photography.

Yujie Gao

The main responsibilities of Yujie are the modelling of the model and the 3D printing process, the laser cutting process, the welding and the layout of the circuit lights. The code part is mainly responsible for the ultrasonic sensor control of the Mp3 module and the photoresistor control of the rudder, as well as the combination of the group's code.

Problems

In the course of the project, we found many problems that took us a lot of time, for example, in the beginning of the 3D printing process, because of unfamiliarity with the printer, trying to print the complete kitten, because the printing time is quite long, can not keep watching, so in the process of printing the wire is not enough, resulting in the print stopped itself halfway, when I replaced the wire to continue printing, only to find that the printer has When I replaced the cable to continue printing, I found that the printer had run out of alignment and could not return to the correct position to continue printing.

I chose to cut the model in half for the third time, but this time I did not choose the internal support and did not increase the density of the outer wall, which led to the outer wall cracking during the printing process, and some areas were brittle, so I was able to reprint again. Finally after the soldering was completed the assembly of the model wiring was also quite a problem for us, because of the size of the model we could not put the development board inside the body of the cat, we could only connect to the solder board hidden under the base of the cat by extending the length of the wires through the bottom of the cat's feet, so the lines were too long often leading to short circuits. I tried wrapping several related wires together with insulating tape, but sometimes there was still a short circuit, for which we had to test the wires individually before putting them together again, which took us more time.

Future plans

After this we wanted to refine our project, because at the beginning we wanted to use a light sensor to control the rotation of the neck of the servo, but this was not possible due to time and difficulty, so we wanted to refine this idea afterwards. We would also like to add a display and a microphone module to allow the cat to carry out simple conversations, so that the cat and human can interact verbally. If we have time we would also like to refine our model and focus on the details of the model to make it look more realistic. Finally the layout of the scene is something that we think needs to be improved.