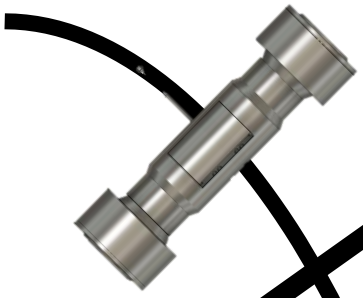
The Buddy Drone



The purpose of Buddy is to company you across a place, showing you the place and stops at interesting hotspots.

Following a Black line on a lighter surface or a White line on a darker surface.

Stopping if he encounters a Horizontal line. Waiting for a set amount of time and moves further then.

The drone if fully autonomous and can be used in many different places.

He can also be fully controlled by a admin terminal.

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Links

Github

https://github.com/synvalux/Drone

Youtube video

https://youtu.be/ybX0w4XnFAQ

Explanation

What is buddy?

Buddy is an autonomous drone that can be used as a buddy to show people through a place, this can be a museums, stores, offices and otherwise.

Buddy uses 2 sets of infrared sensors to detect when there are any turns or corners in the course.

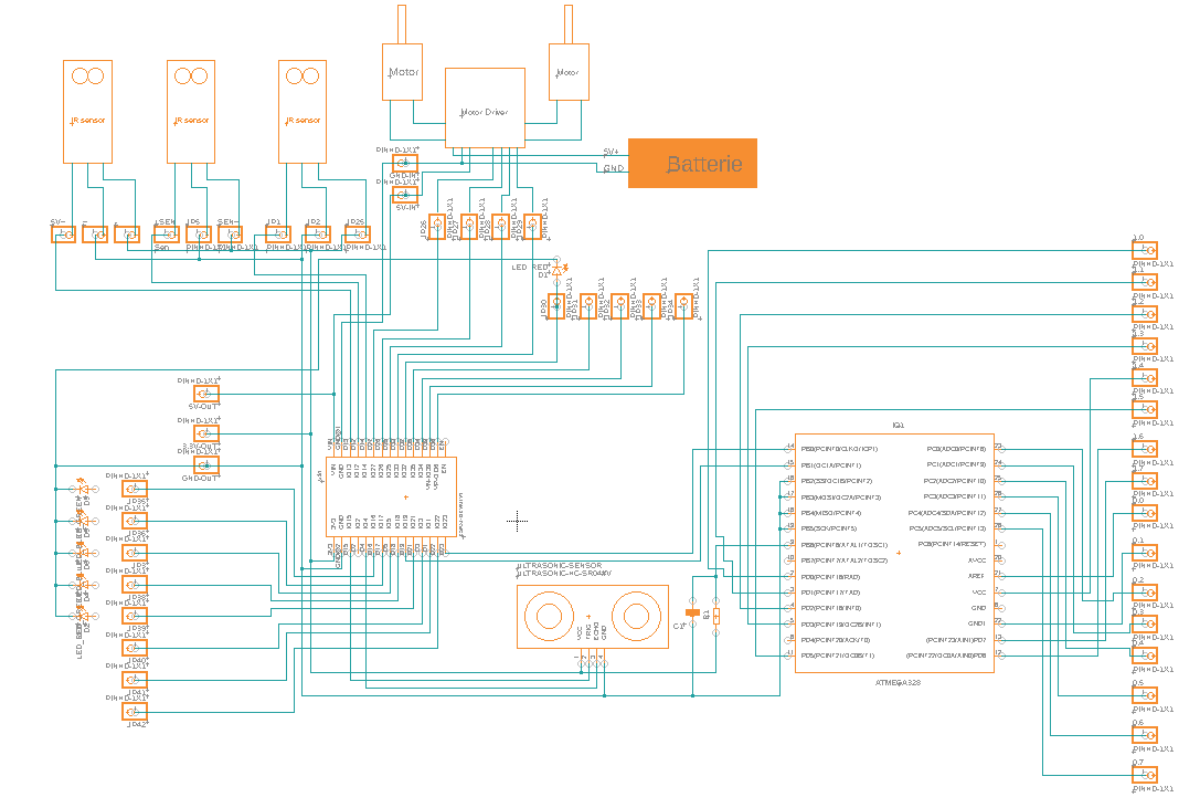
He is also programmed to stop at a horizontal line in his path. This can be used to show people an interesting location or for many more usages.

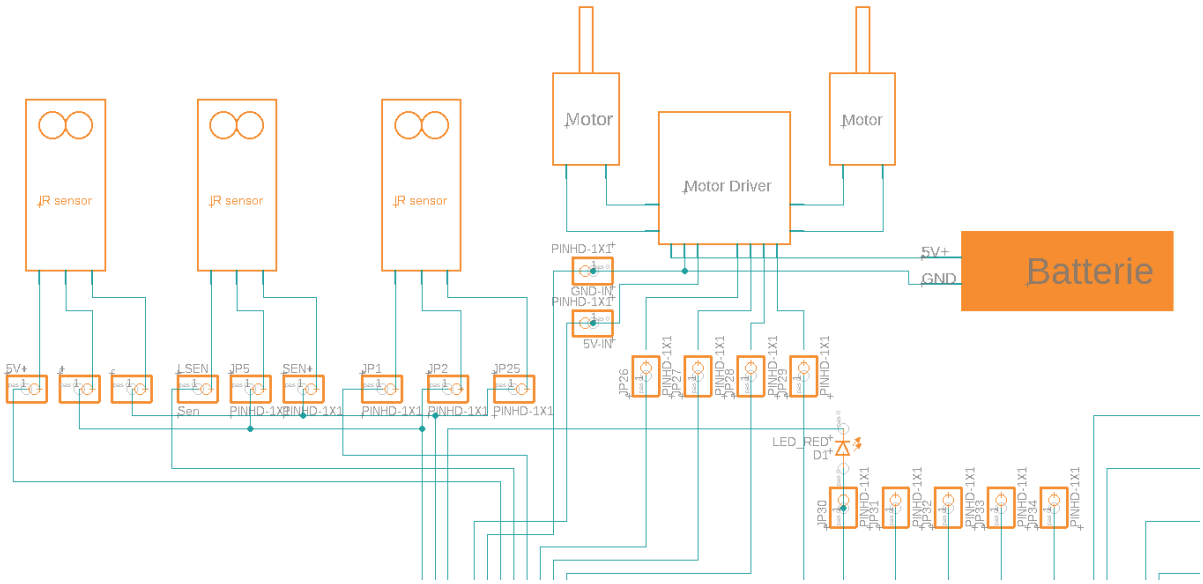
He is also easy to be used. Just place him on the line facing the direction you want him to drive him. And press the on button. Buddy will automatically start driving. This can be changed in a later stage or as the client desires.

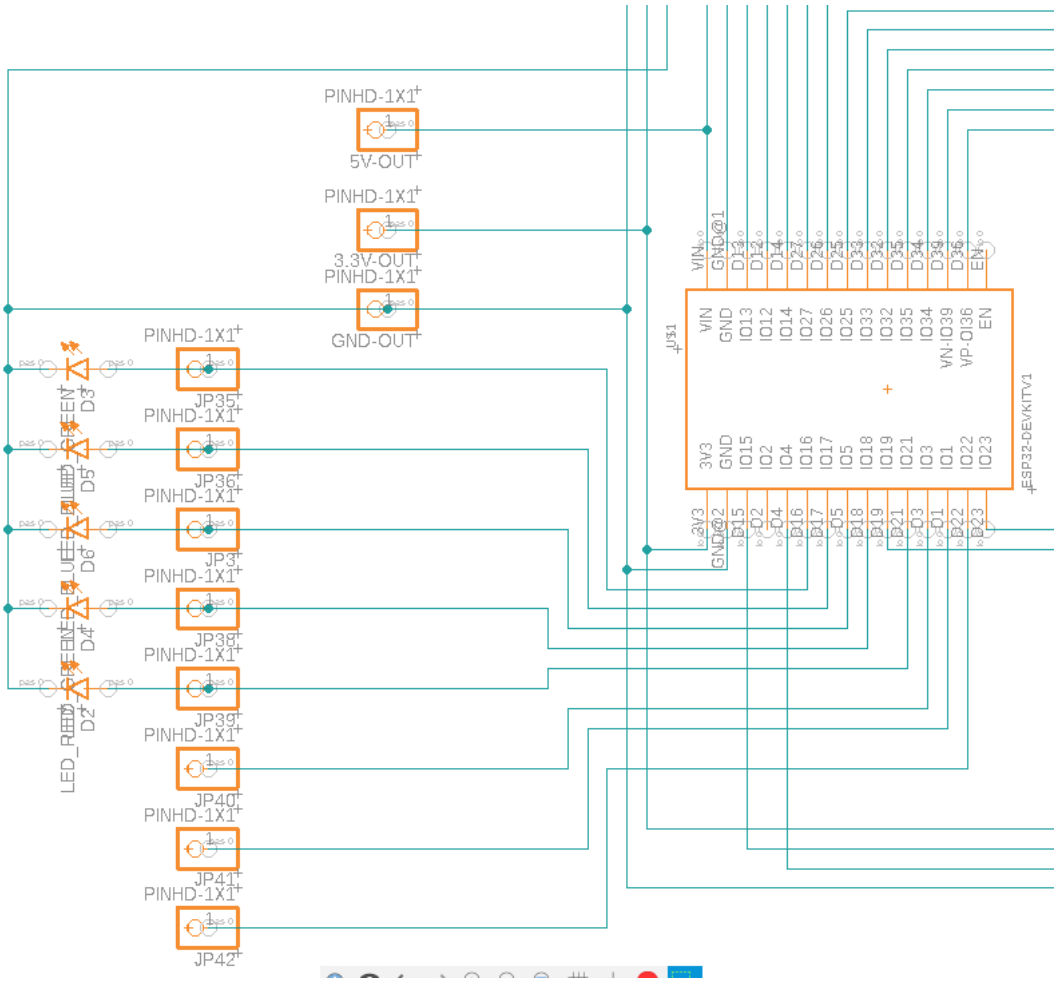
Buddy is also connected to the master terminal thought the network. This makes buddy so much powerful. As you can track his location, monitor his power usage, see what places he is most active in, and also being able to take control if something would happen or otherwise.

Hopefully this drone can be your BUDDY or the buddy of your clients and make everyone's day!

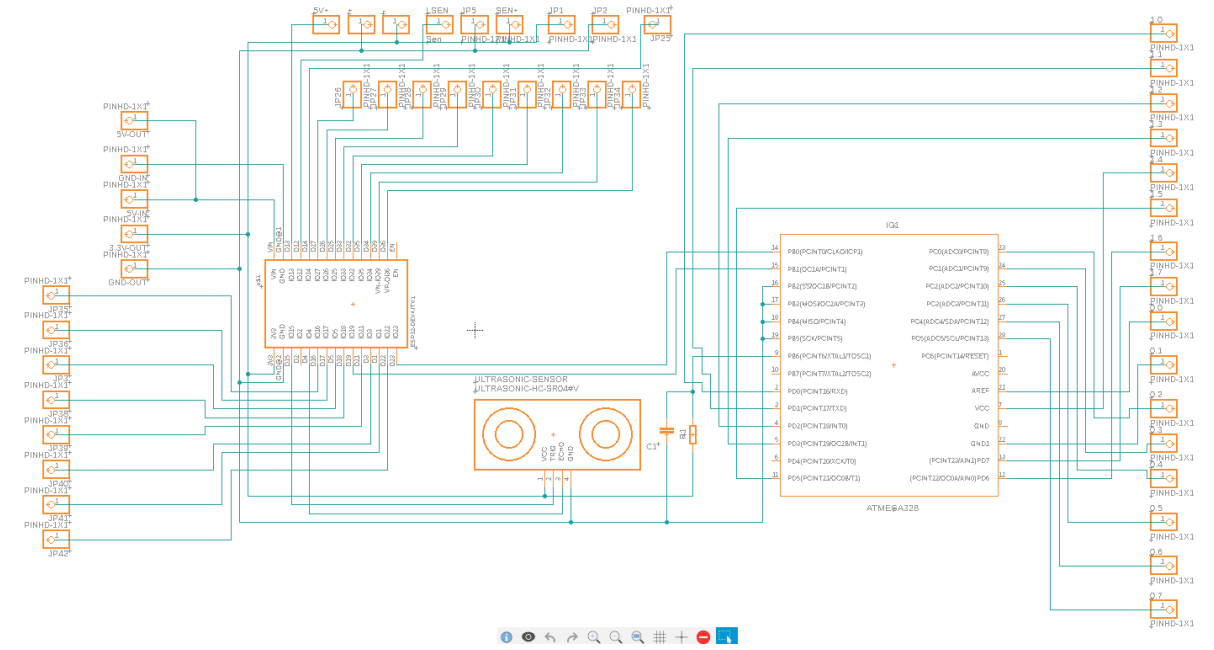
Electronics schematic

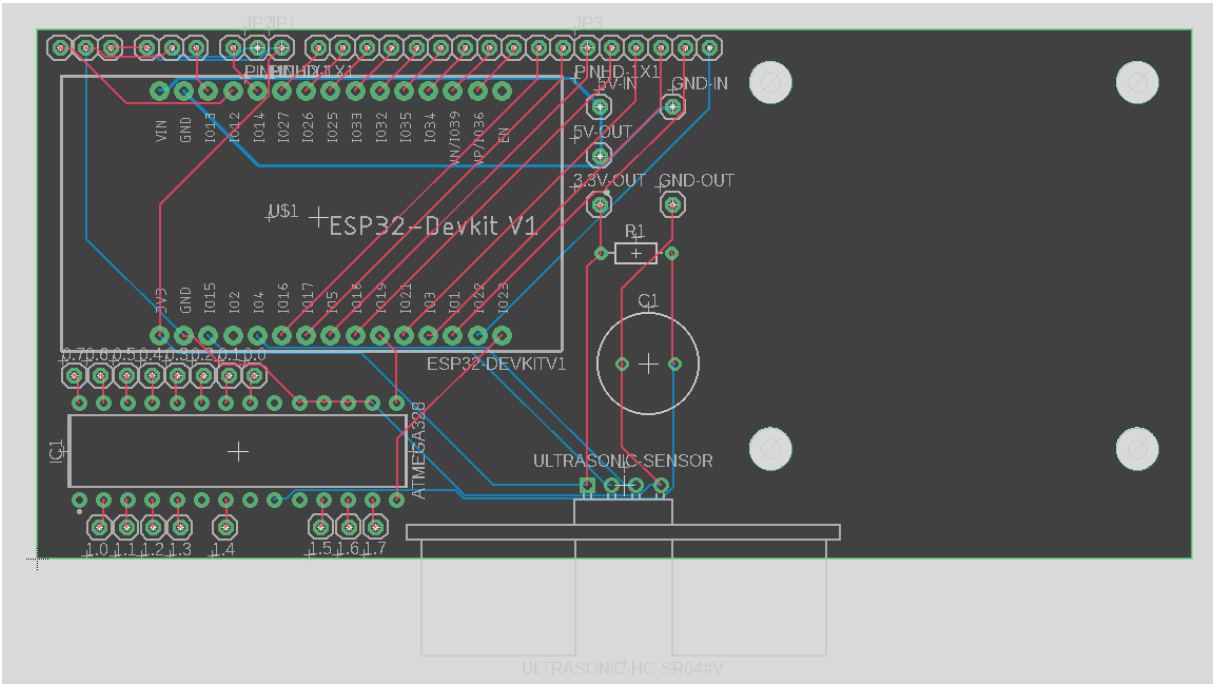




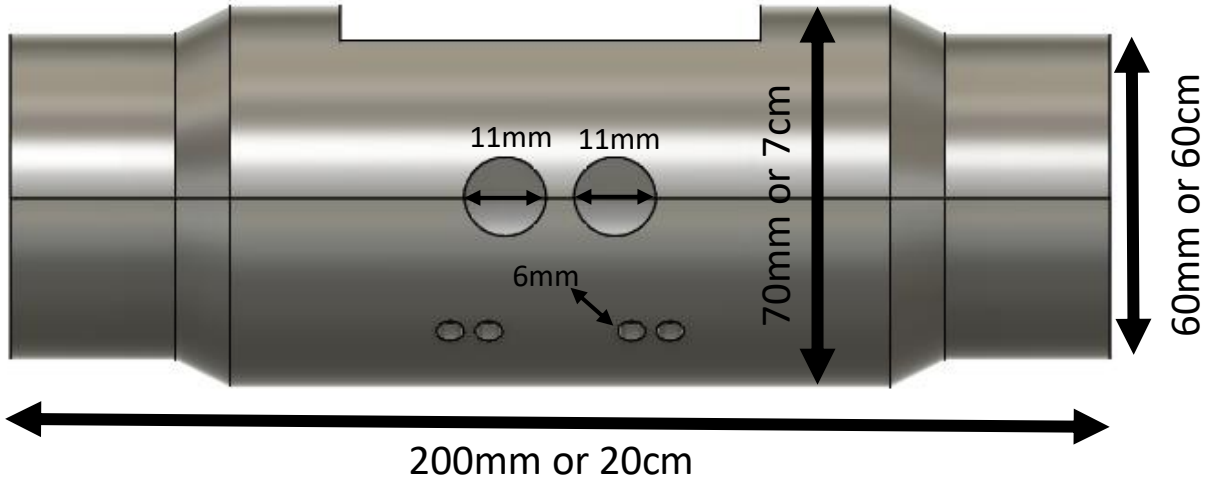

PINHD-1X1
5V-OUT
PINHD-1X1
3.3V-OUT
PINHD-1X1
GND-OUT
PINHD-1X1
JP35
PINHD-1X1
JP36
PINHD-1X1
JP37
PINHD-1X1
JP38
PINHD-1X1
JP39
PINHD-1X1
JP40
PINHD-1X1
JP41
PINHD-1X1
JP42
LED_RED
LED_GREEN
LED_BLUE
D2
D3
D4
D5
D6
U$1
ESP32-DEVKITV1
VIN
GND
IO13
IO12
IO14
IO27
IO26
IO25
IO33
IO32
IO35
IO34
VN-IO39
VP-IO36
EN
3V3
GND
IO15
IO2
IO4
IO16
IO17
IO5
IO18
IO19
IO21
IO3
IO1
IO22
IO23

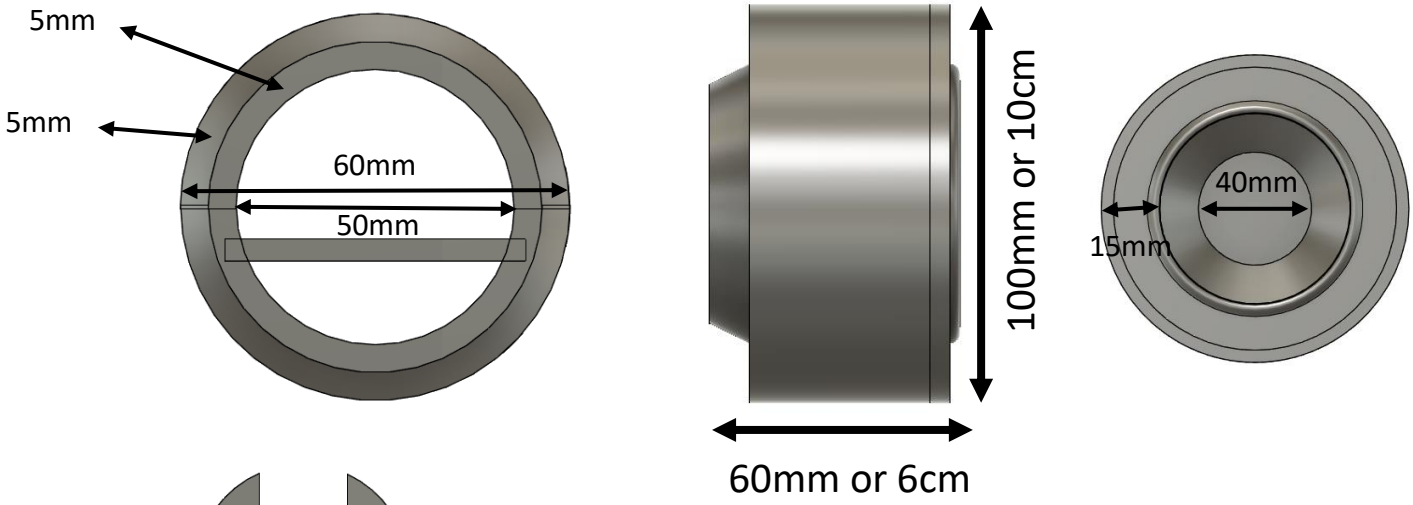
PCB schematic

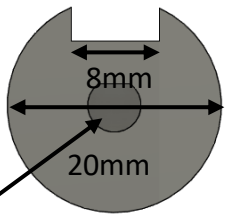




Drone schematics

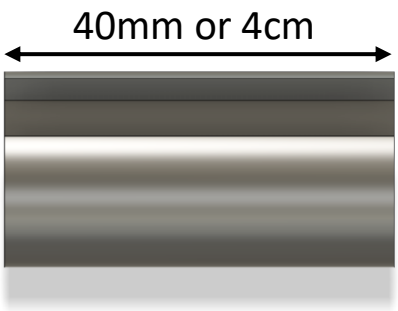


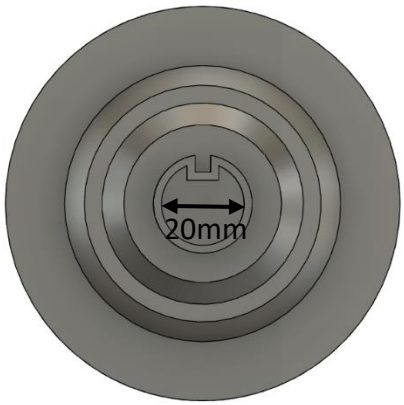




Middle piece to the measurements from the motor shaft to fit

Here that's 5mm with the top off





Electronic components

ESP32:

Main component in the drone, used as main controller for the drone.

Connected to everything and runs the scripts for the drones.

Infrared sensor:

The infrared sensors can detect the lines on the ground. Sends that data to the ESP32 to see where the line goes.

Work voltage: 3-5V

Gives a 1 or 0 signal to the controller

Motors:

The motors drive the wheels using the motor drivers. These motors have also a transmission where you can set the RPM you want.

Work voltage 6-12V

RPM: 50/200/300 rpm

Motor drivers:

These are used to control the motors. These can be controlled by the main controller.

Logic voltage: 5V

Logic amps: 0mA-36mA

Drive voltage: 5V-35V

when ENA Enable IN1 IN2 control OUT1 OUT2

when ENB Enb Enable IN3 IN4 control OUT3 OUT4

MCP23016:

A I/O extension for a additional 16 inputs or outputs

RGB Led:

We use RGB leds as signalization for our drone

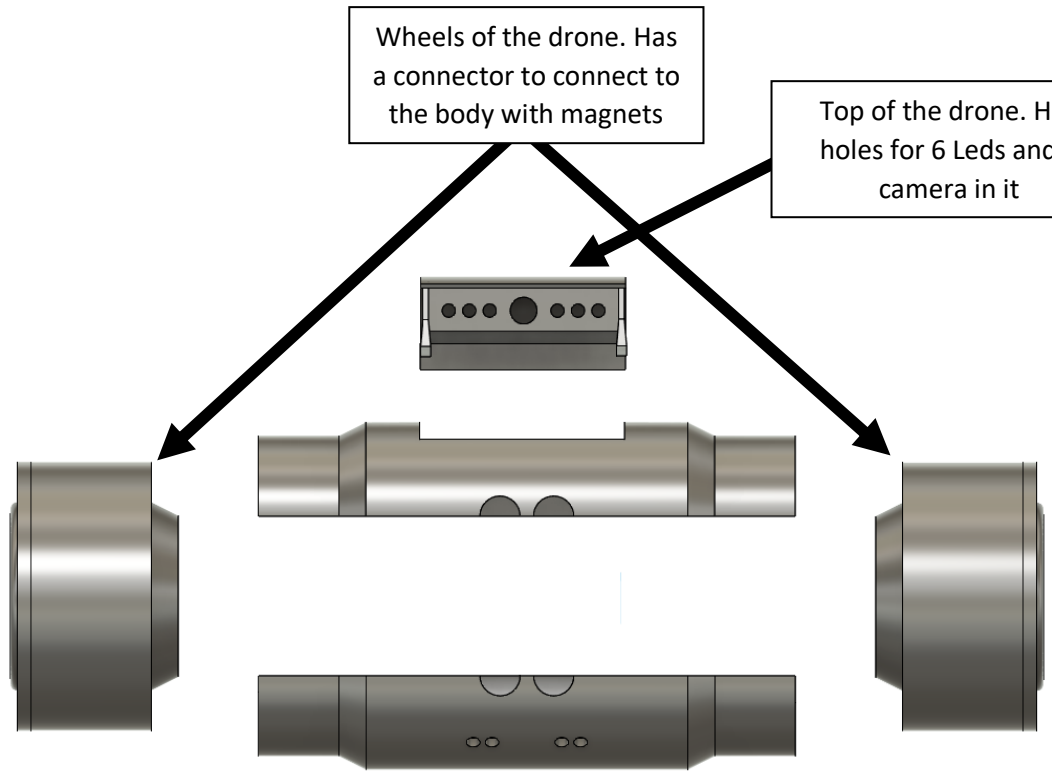
Ultrasonic sensor:

Used to measure distance in front of the drone, this can be used to the drone doesn't run into things

LIPO battery:

We use a LIPO battery as power source for the drone, It can last long and it's easily charged

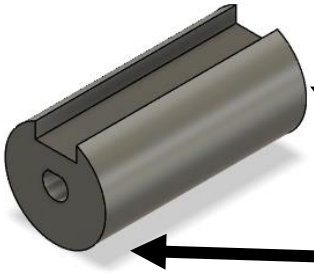
Drone components



Wheels of the drone. Has a connector to connect to the body with magnets

Top of the drone. Has holes for 6 Leds and a camera in it

Drone body that has everything in it for electronica and motors



Connector piece that connect the wheels to the body of the drone

At one side it has a hole to put on the motors

On the other side a magnet that snaps into place on the wheels.