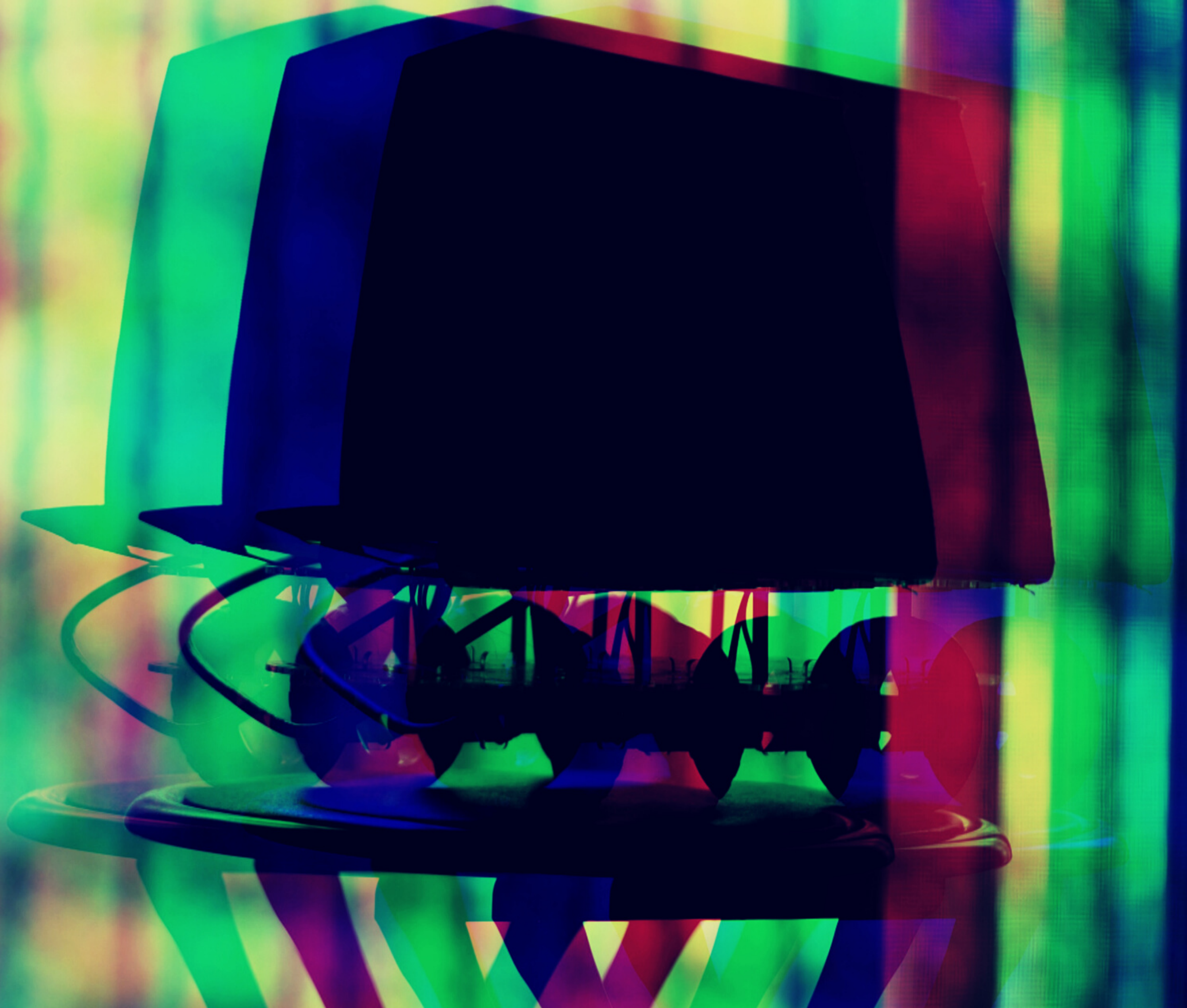
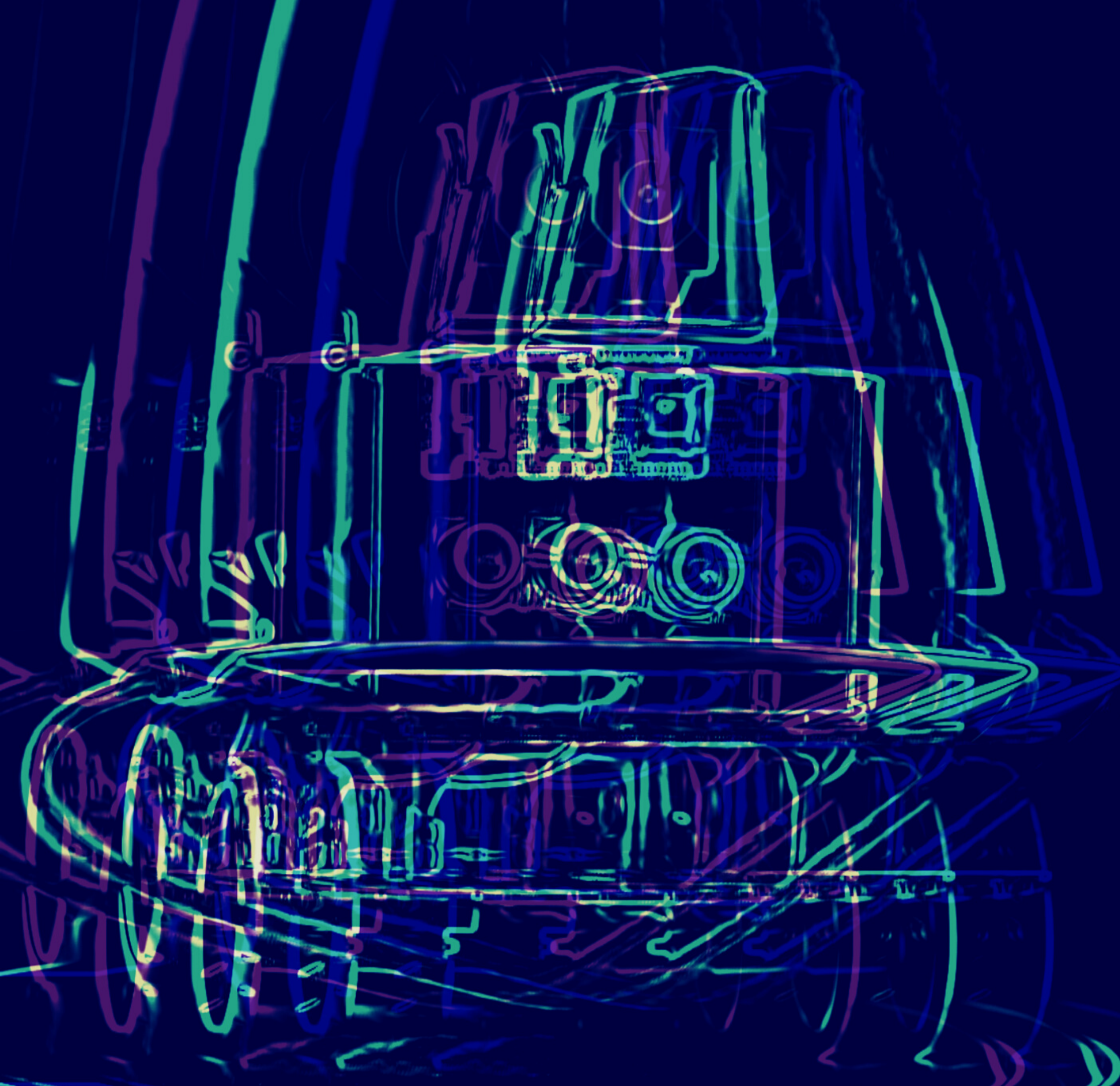


SEARCH AND RESCUE ROBOT

A MECHATRONICS
PROJECT BY
MARCO VALDEZ





FEATURES

Can be controlled via wi-fi using a laptop or phone or any device that has a browser

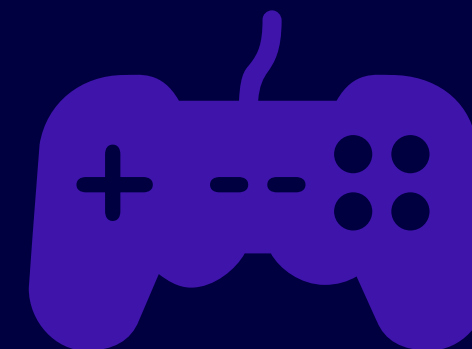
Has a camera for first-person view

Has collision detection through the ultrasonic sensor so that it would automatically stop when it's about to hit an obstacle

Able to recognize specific objects to assist in searching (via an object detection server)

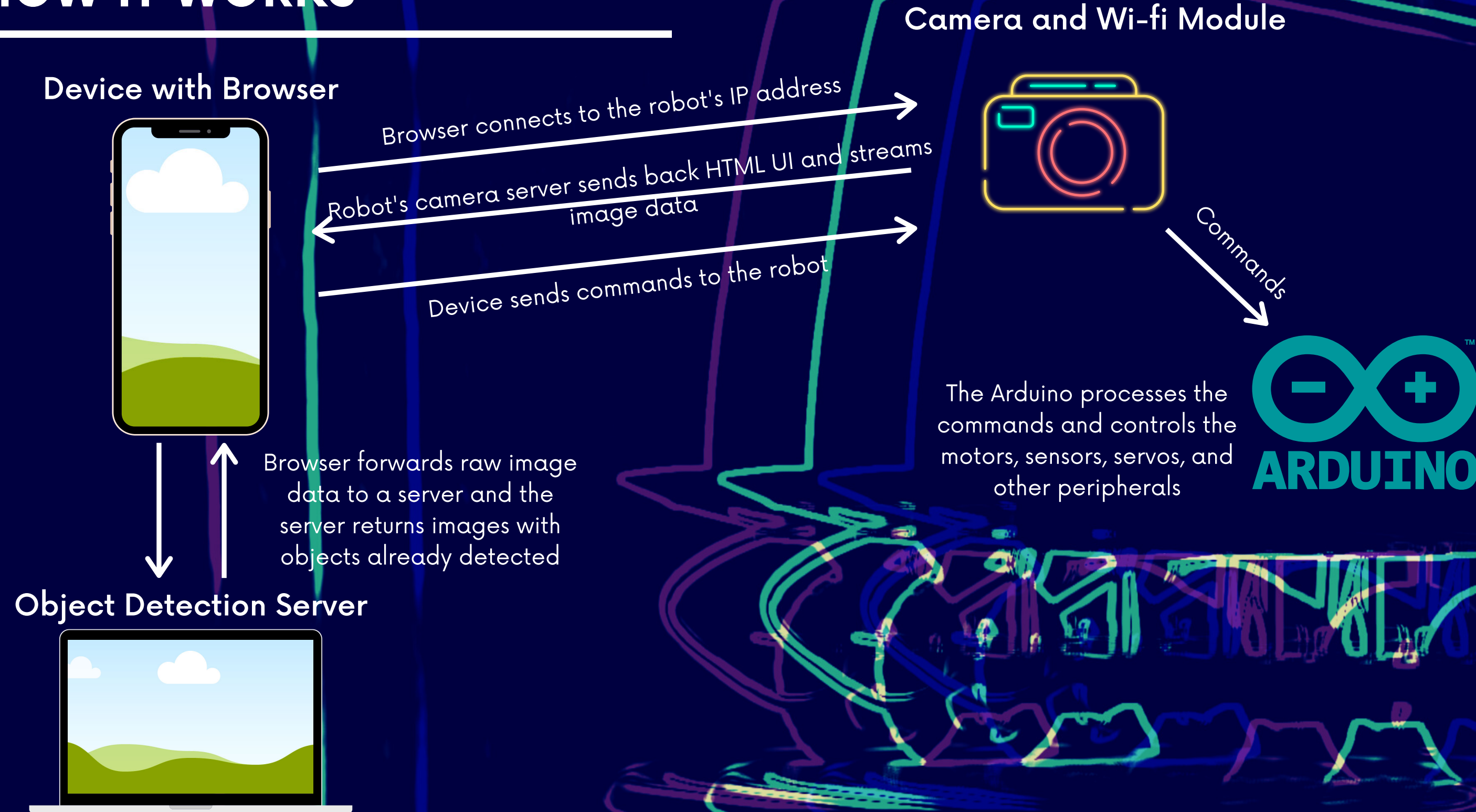
Armed with a foam dart pistol and laser module for dealing with threats

CONTROLS



Forward
Backward
Turn Left
Turn Right
Nudge Left
Nudge Right
Stop
Toggle Laser
Fire Weapon

HOW IT WORKS



PARTS

Arduino Uno

ESP32-Cam microcontroller - <https://www.amazon.ca/gp/product/B07WTBTKDM>

Robot Car Chassis with 4x DC motors and gearboxes - <https://www.amazon.ca/gp/product/B075LD4FPN>

4-channel relay - <https://www.amazon.ca/gp/product/B072XGF4Z3>

USB Power Bank

Laser Module

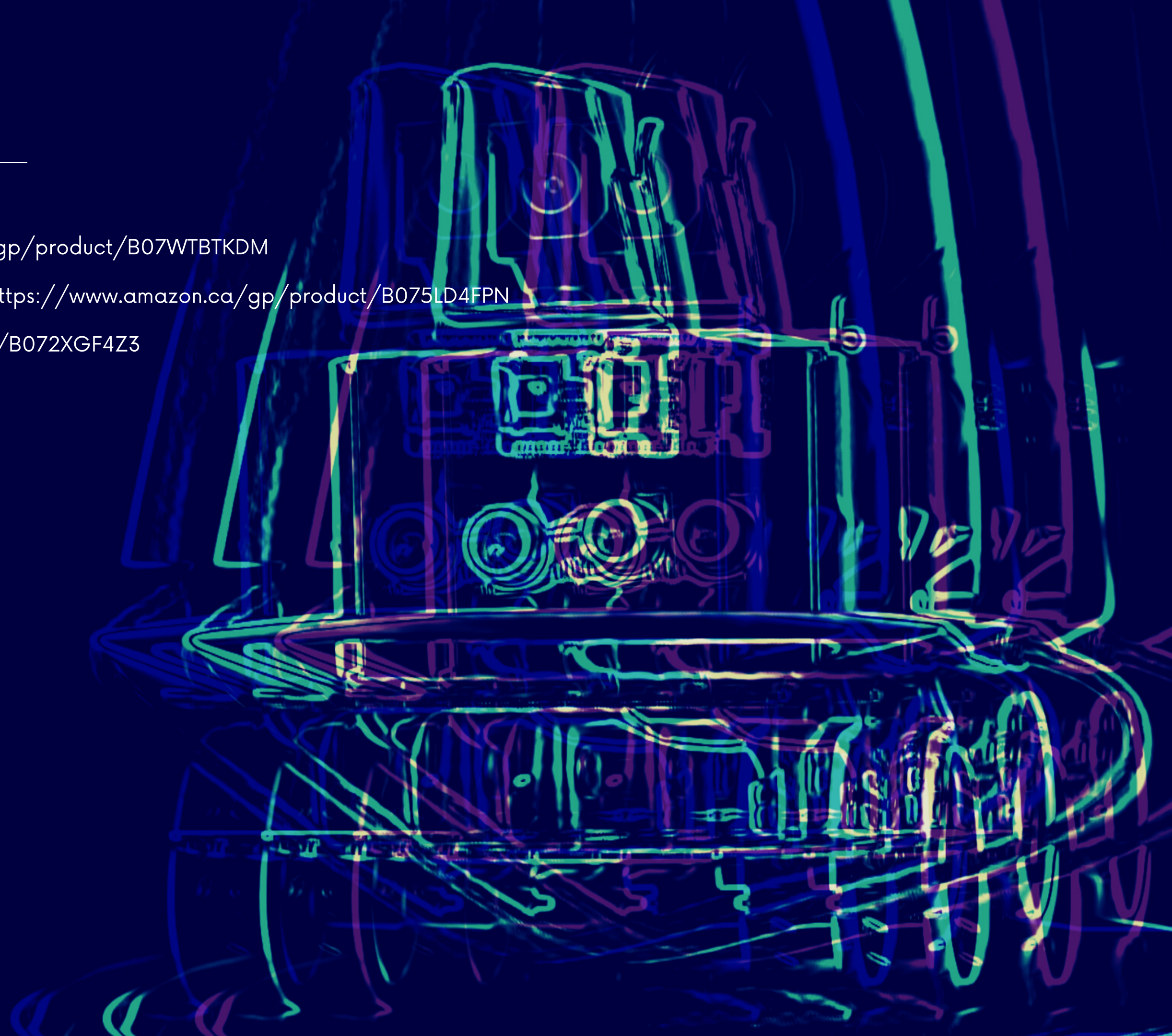
Ultrasonic Sensor

Micro servo

Ceramic capacitors

Foam dart gun

Breadboard



REFERENCES

DC Motor Controller with Two Relays

<https://www.instructables.com/id/DC-Motor-Controller-With-Two-Relay/>

Programming ESP32-CAM with the Arduino Uno Without FTDI or USB-TTL

<https://create.arduino.cc/projecthub/PMGOHARIAN/setting-up-esp-cam-with-arduino-no-more-usb-ttl-35467a>

I2C Between Arduinos

<https://www.instructables.com/id/I2C-between-Arduinos/>

Editing the ESP32-CAM Camera Web Server HTML

<https://robotzero.one/esp32-cam-custom-html/>

Tensorflow Object Detection Tutorial

<https://github.com/EdgeElectronics/TensorFlow-Object-Detection-API-Tutorial-Train-Multiple-Objects-Windows-10>

How to Create a Simple Python WebSocket Server Using Tornado

<https://www.toptal.com/tornado/simple-python-websocket-server>