# Laser Aiming Turret

Final presentation

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# Disclaimer

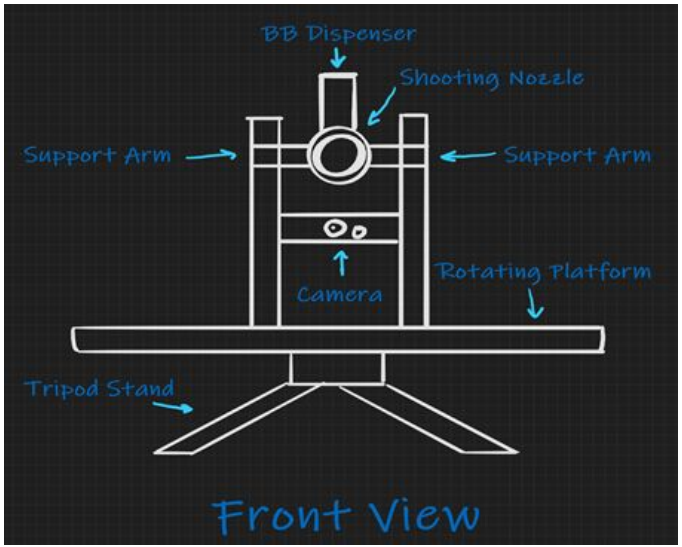
The project is not completed

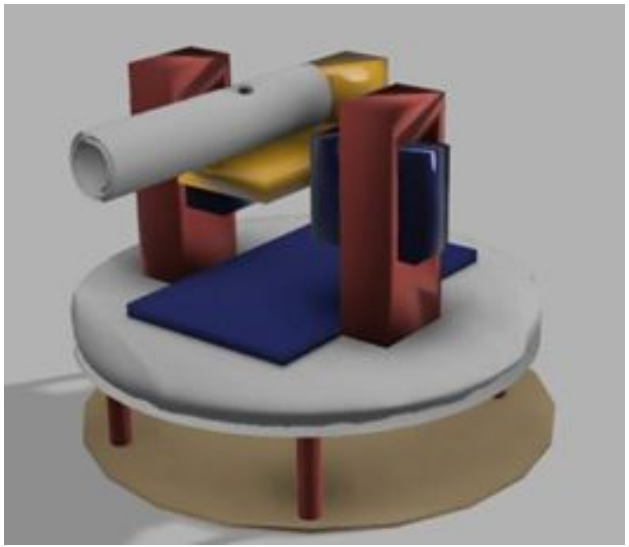
But...

# Plan for today

- Review of the concept and idea
- Explain the structure of mechanism
- Present each component
- Have a loo on the problem
- Conclusion

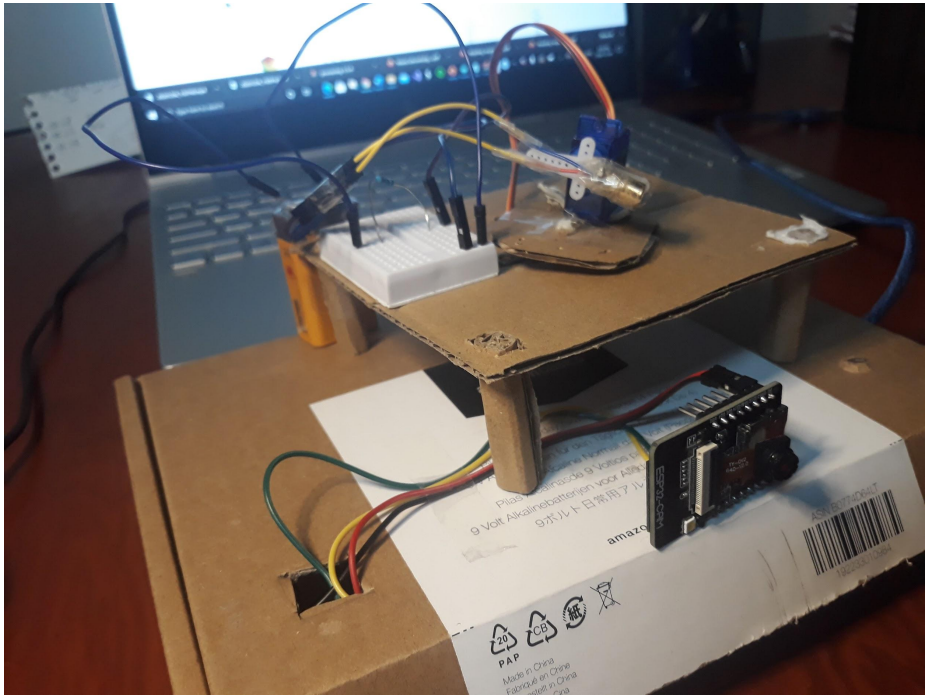
# The idea


BB Dispenser
Shooting Nozzle
Support Arm
Support Arm
Camera
Rotating Platform
Tripod Stand
Front View



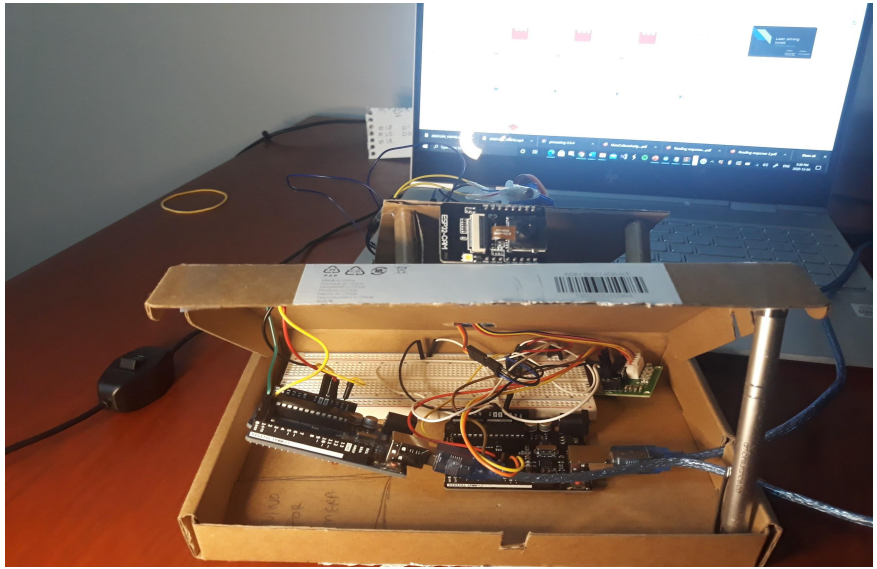
# What does turret do?

1. Detects red spot of laser pointer
2. Aims
3. Shoots by another laser

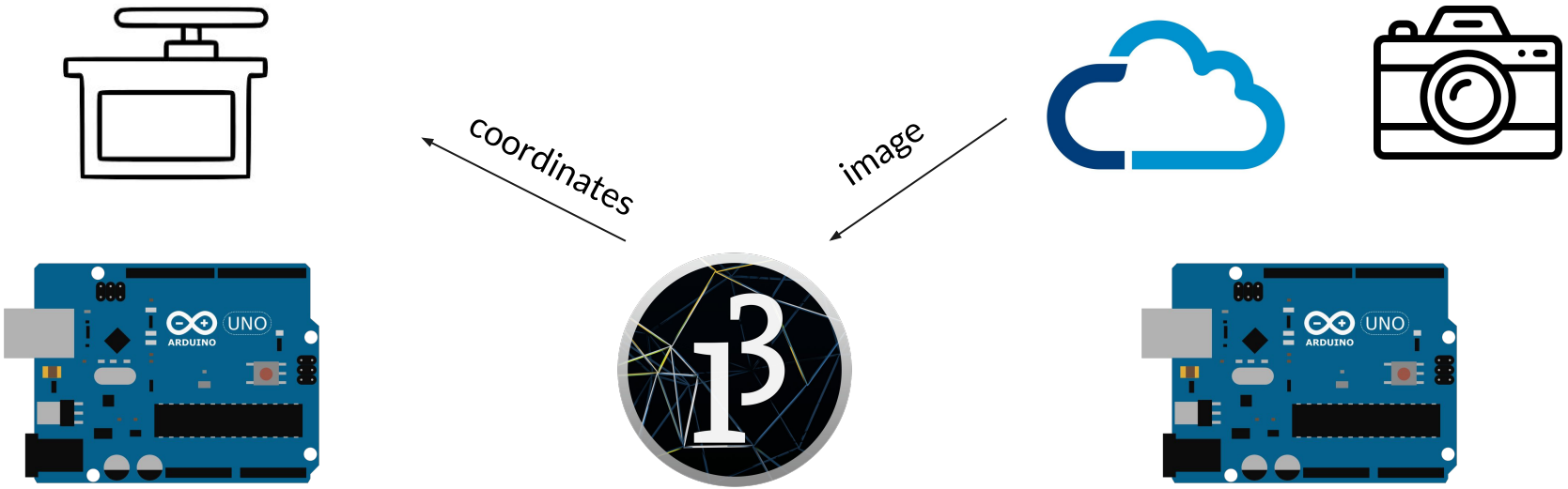


# Inside the Box

- Arduinos
- Connections
- USB Connections.



# Structure of the project



# Camera

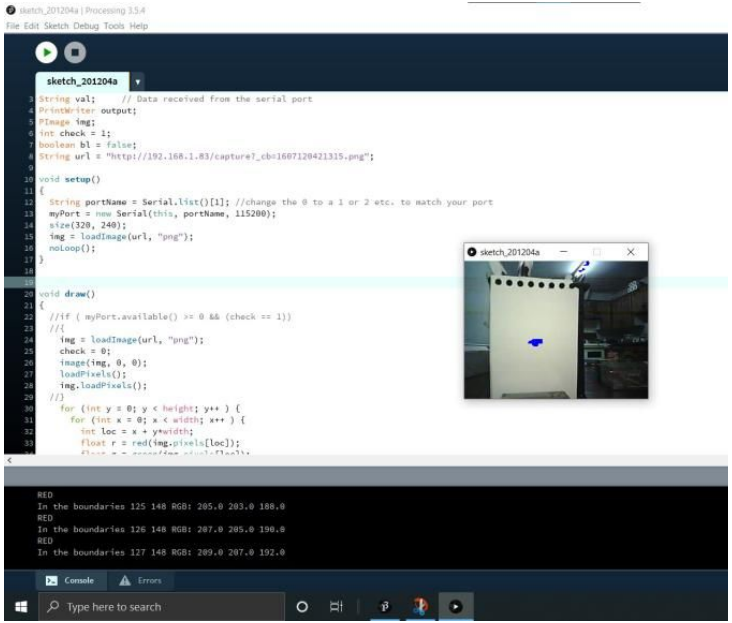
- Works independently on batteries
- Sustain local server
- Everyone in WIFI network can connect to it

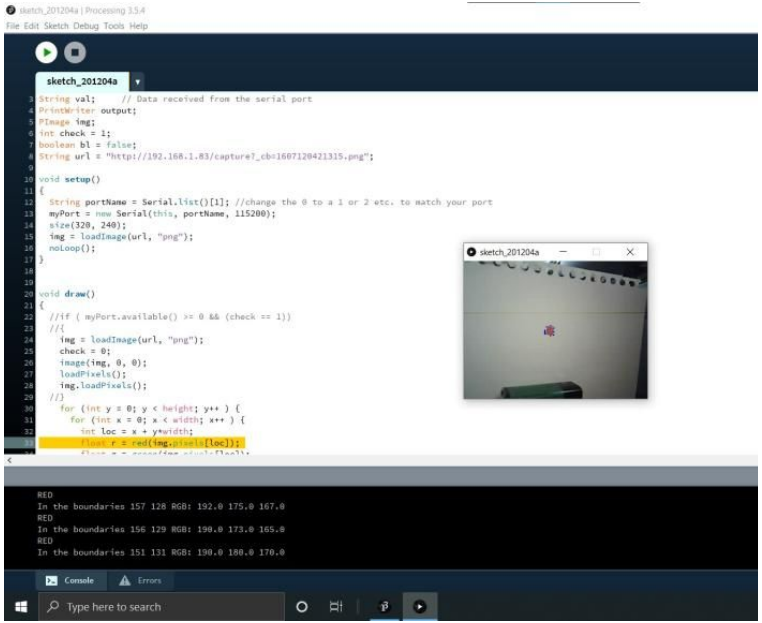
# Demo

# Processing

- Special software for processing images
- Works in pair with arduino board
- Connects to the server and injects image
- Pixelizes a frame and detects all red pixels
- Prints its x , y coordinates related to the image

# Demo


sketch_201204a | Processing 3.5.4
File Edit Sketch Debug Tools Help
sketch_201204a
String val;  // Data received from the serial port
PrintWriter output;
PImage img;
int check = 1;
boolean bl = false;
String url = "http://192.168.1.83/capture?_cb=1607120421315.png";
void setup()
{
String portName = Serial.list()[1]; //change the 0 to a 1 or 2 etc. to match your port
myPort = new Serial(this, portName, 115200);
size(320, 240);
img = loadImage(url, "png");
noLoop();
}
void draw()
{
//if ( myPort.available() >= 0 && (check == 1))
//{
img = loadImage(url, "png");
check = 0;
image(img, 0, 0);
loadPixels();
img.loadPixels();
//}
for (int y = 0; y < height; y++ ) {
for (int x = 0; x < width; x++ ) {
int loc = x + y*width;
float r = red(img.pixels[loc]);
sketch_201204a
RED
In the boundaries 125 148 RGB: 205.0 203.0 188.0
RED
In the boundaries 126 148 RGB: 207.0 205.0 190.0
RED
In the boundaries 127 148 RGB: 209.0 207.0 192.0
Console
Errors
Type here to search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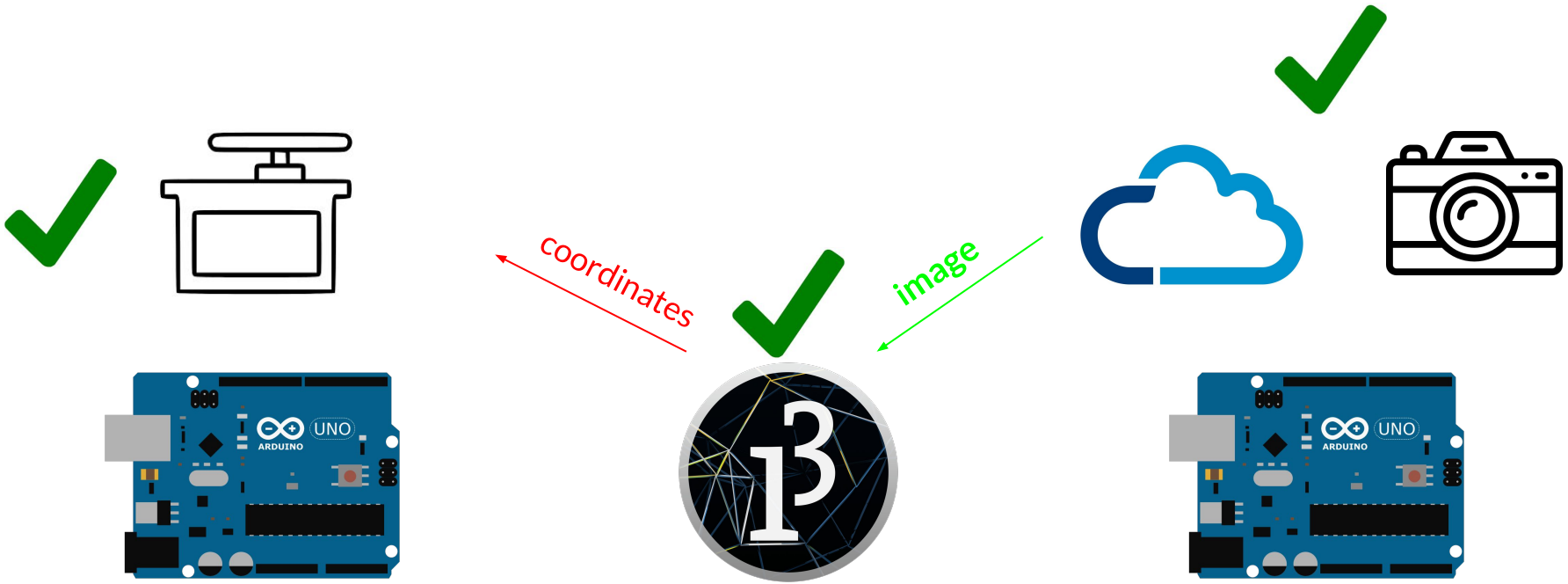
In the boundaries 157 128 RGB: 192.0 175.0 167.0
RED
In the boundaries 156 129 RGB: 190.0 173.0 165.0
RED
In the boundaries 151 131 RGB: 190.0 180.0 170.0
Console
Errors
Type here to search

# Servos and nozzle

- Combines **step-motor** , **servo-motor** and **laser pointer**
- Receives coordinates from processing
- Rotate laser pointer accordingly
- Shoots a laser

# Demo

# What we have

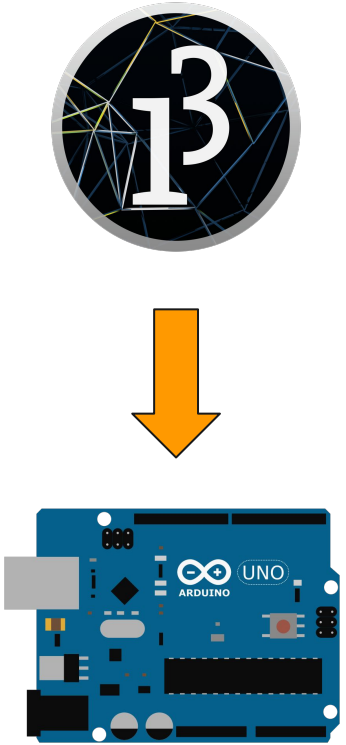


# The problem

Processing generates correct coordinates

Servos are able to rotate according to these coordinates

Issues related to communication.



# What we know about it

**One of 3 scenarios**

1. No data
2. Infinite list of 1s and 0s
3. Correct and defected data

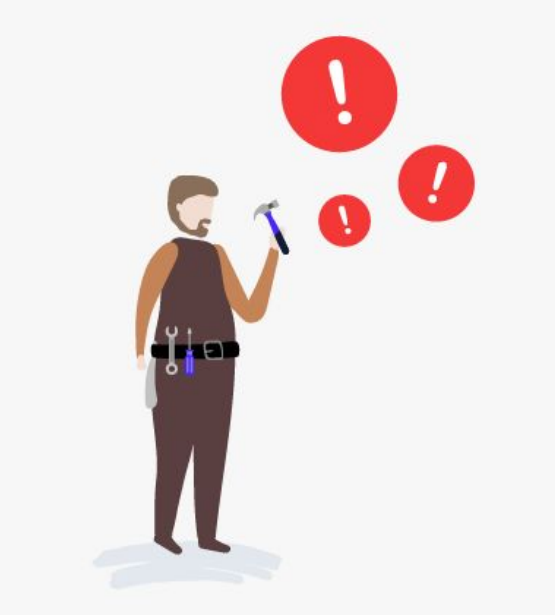
Serial monitors behaves randomly

**Our attempts**

1. Using I2C protocol
    a. Sending integers
    b. Converting in bytes
    c. Converting in C string

# Our presumptions

- Synchronizing problem
- Byte conversion
- 1 serial monitor for 2 independent processes



# We achieved:

- Server launch
- Image processing
- Made step motors and servos rotate accordingly
- Connection between 2 plates and 1 extra software*

# Conclusion

We learnt a lot

Realized almost all we planned

Project is 99% ready

1% is just a matter of time

# Thank you for attention

# Q&A