

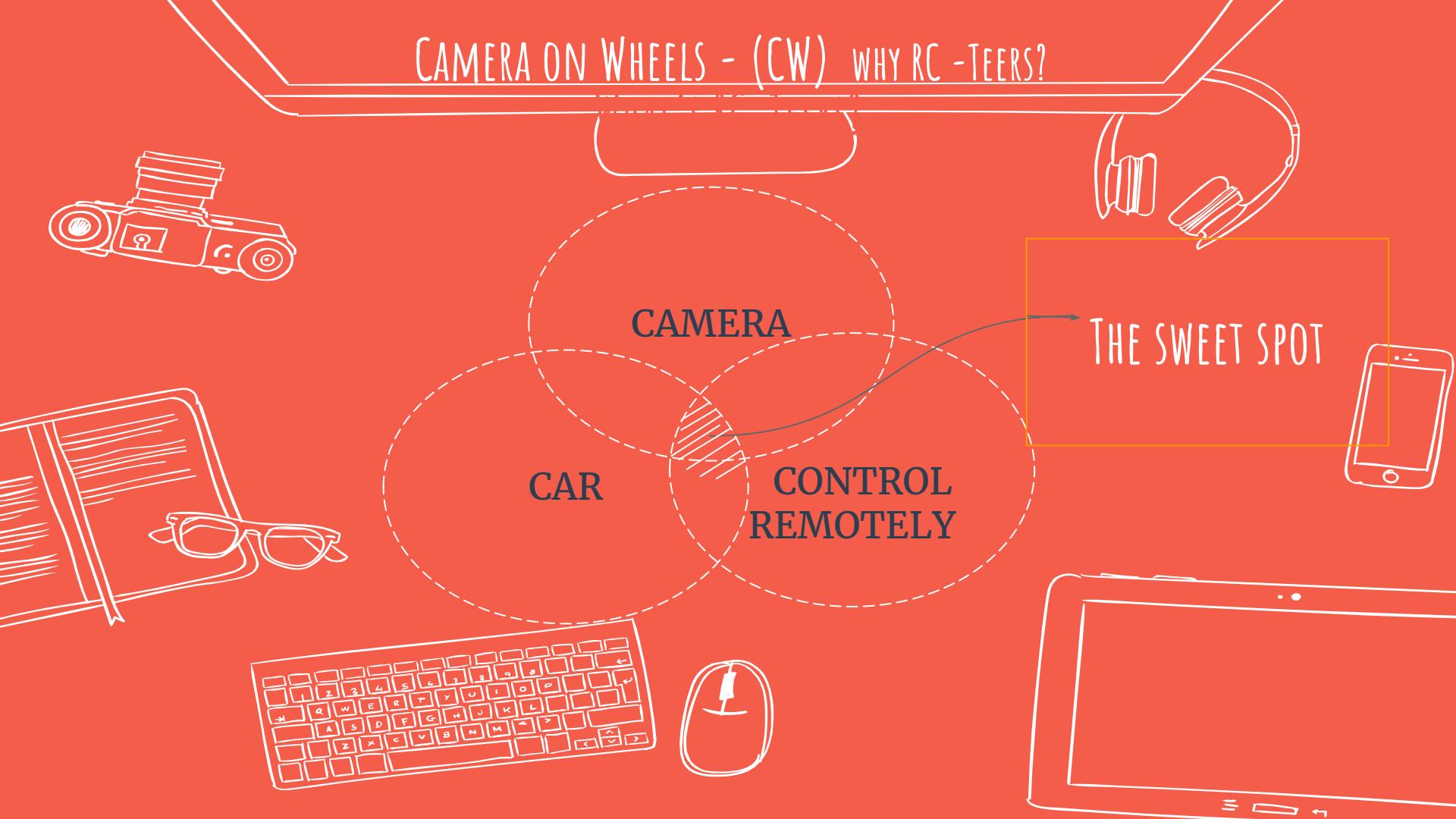
SWASTIKA BHAT

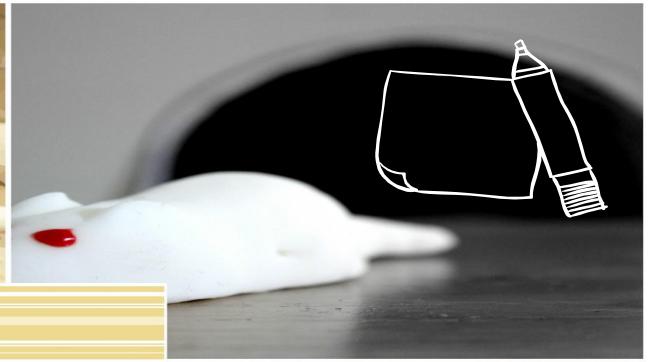
THE RC- TEER'S
PRESENT

CAMERA ON WHEELS

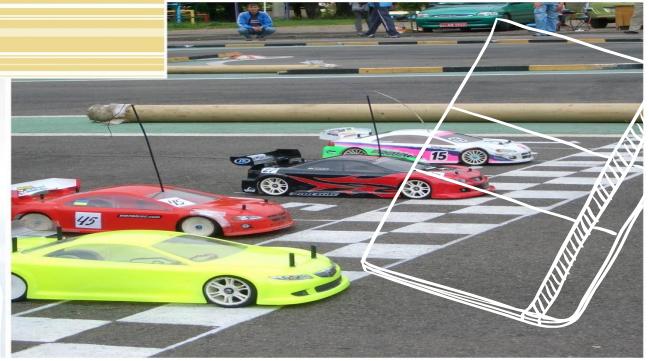
ONUR YILDIRIM

CAMERA ON WHEELS - (CW) WHY RC -TEERS?





WHAT ARE WE TRYING TO SOLVE?



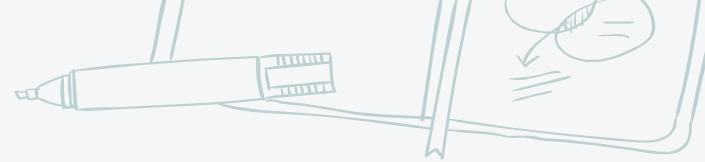
WHAT IS AVAILABLE IN THE MARKET?



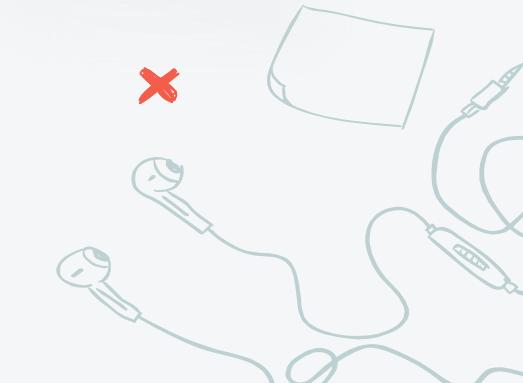
**conditions apply. The user needs to be in the network range of the car

Our Product

**conditions apply. Car can be used as long as both the user and the car have same or different wifi access.



YES, YOU CAN CONTROL IT REMOTELY





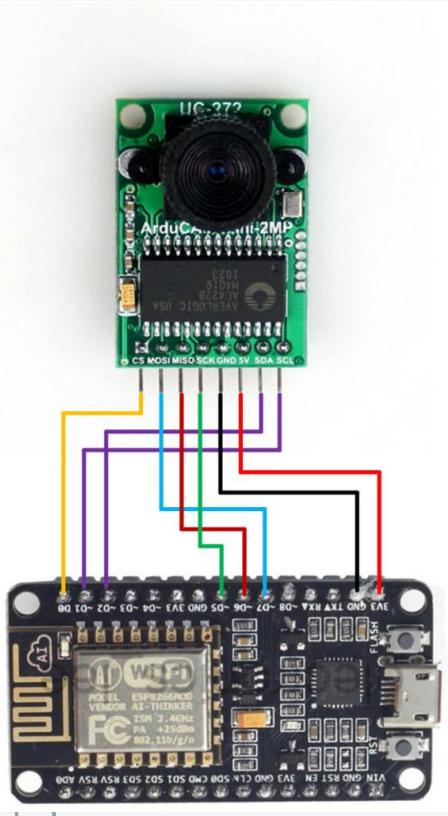
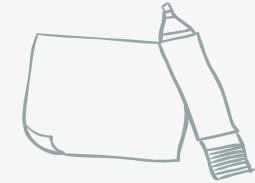
WHATS INSIDE IT??

WHAT'S INSIDE IT??

- ✖ Two *ESP8266*
- ✖ *Ardu Cam OV2640*
- ✖ *Power Bank*
- ✖ *Motor shield*
- ✖ *USB chord*
- ✖ *Connecting wires*
- ✖ *Lots of hard work*



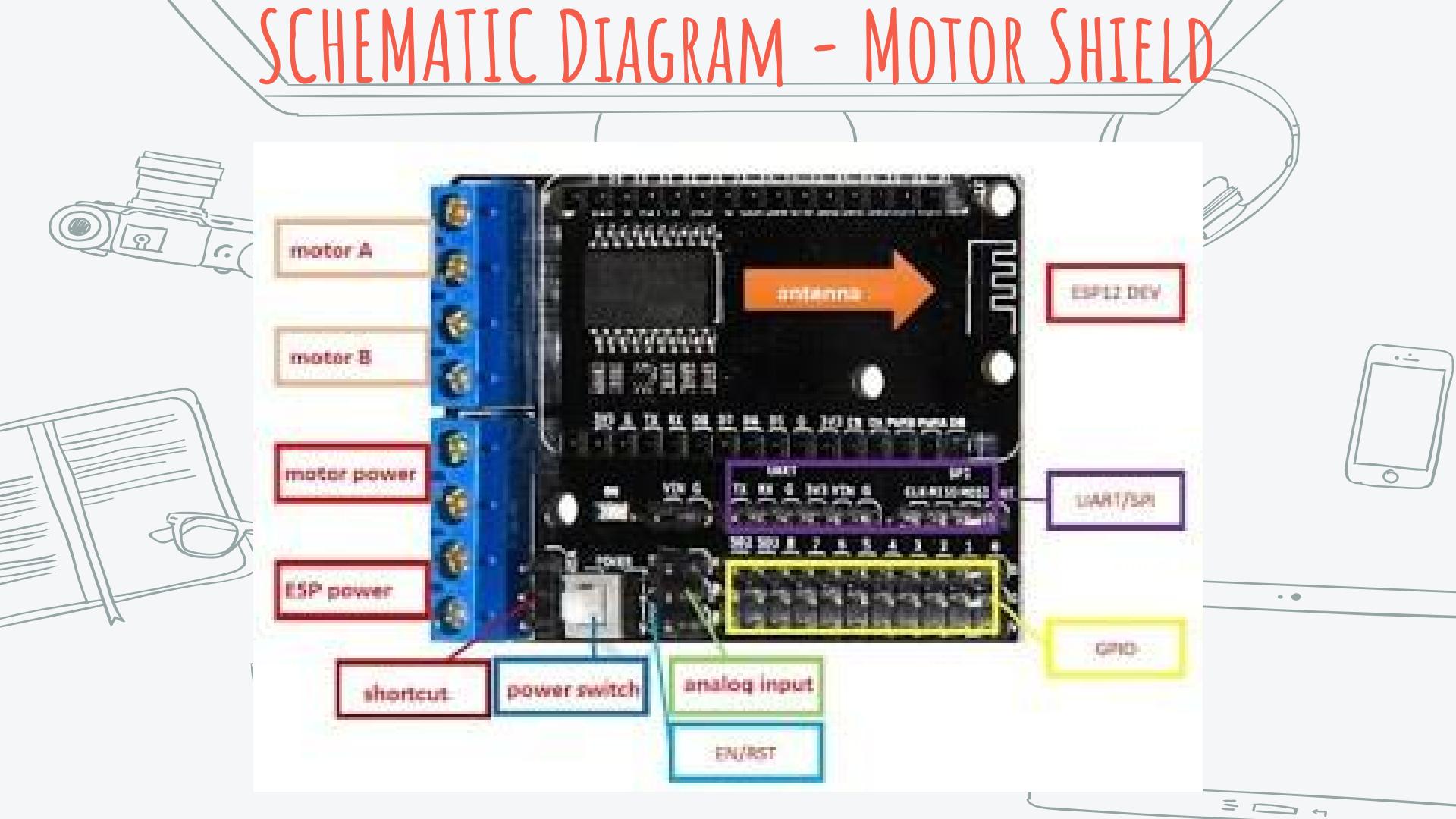
SCHEMATIC DIAGRAM - ARDUCAM



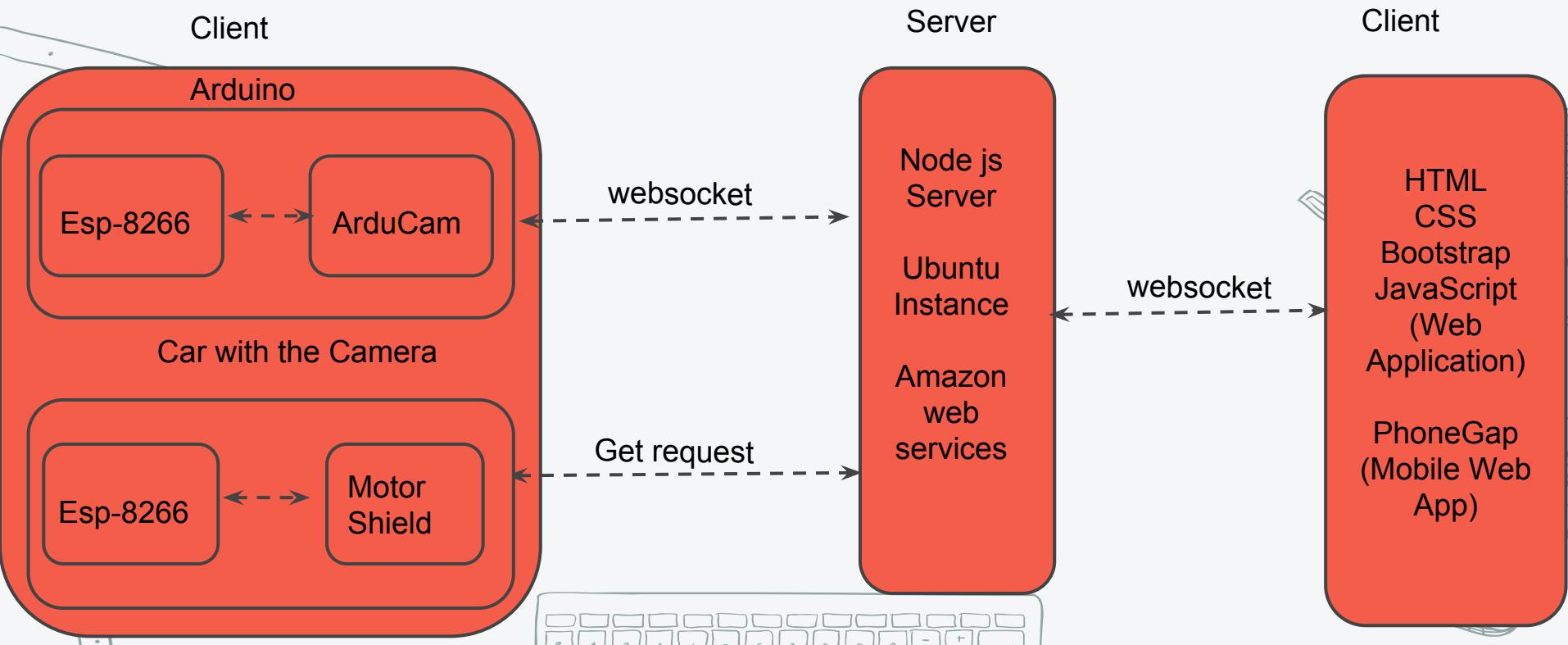
| HUZZAH Feather ESP8266 | ArduCam Ov2640 |
|------------------------|----------------|
| #16 | CS |
| #13 | MOSI |
| #12 | MISO |
| #14 | SCK |
| GND | GND |
| 3V | VCC |
| #4 | SDA |
| #5 | SCL |



SCHEMATIC DIAGRAM - MOTOR SHIELD



BLOCK DIAGRAM



BASIC CONCEPT

A PICTURE IS WORTH A THOUSAND LINES OF
CODE

Server



Device

Car with
Camera

HOW WE DID IT?

THE CAMERA

Camera connected to ESP8266

Requests a websocket connection.

Captures the image in jpeg format.

Acts as a client and sends bytes of binary data to the webserver.

Cloud Server

Establishes a websocket connection.

Takes small bytes of data from the camera.

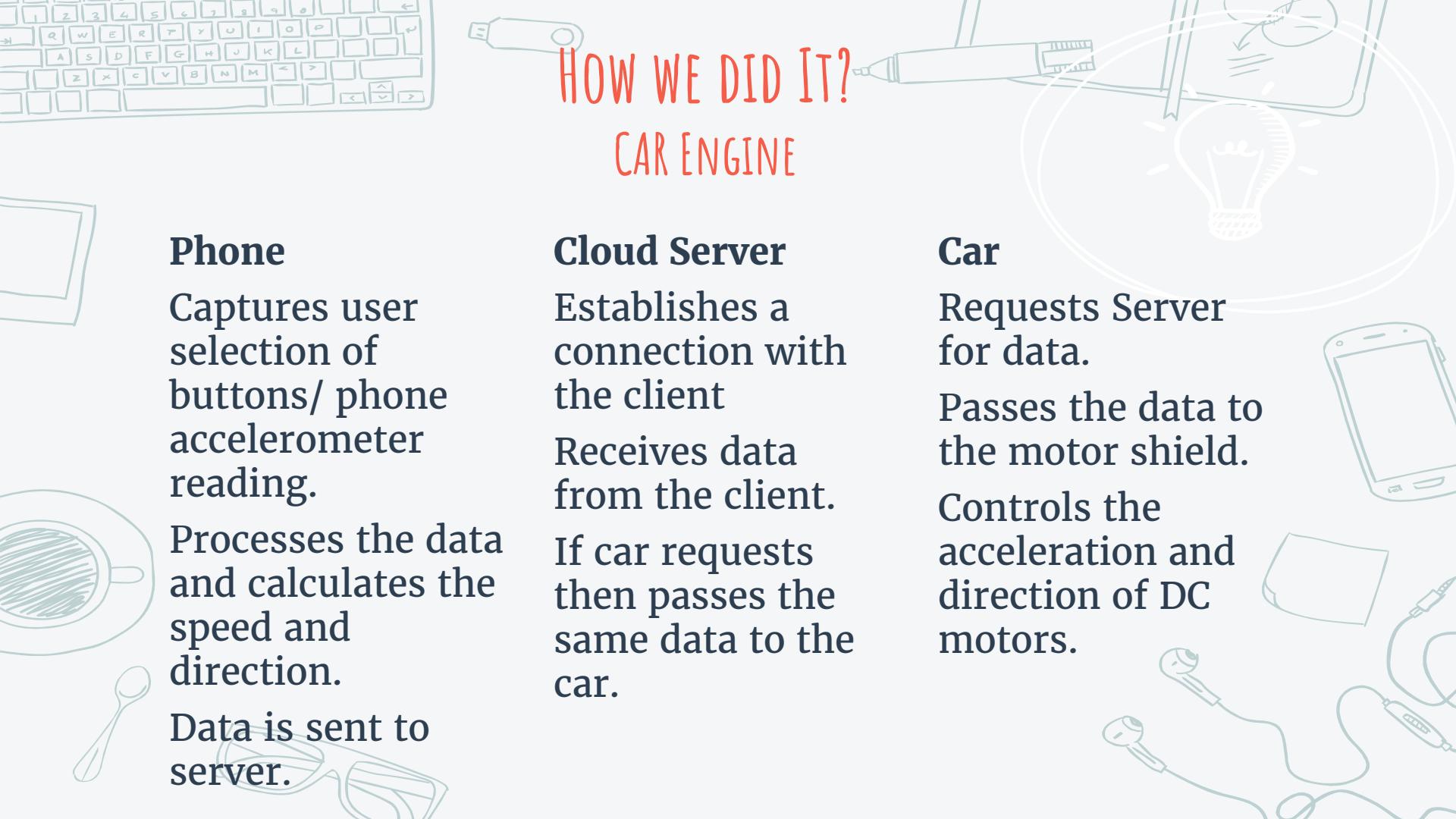
Passes the same bytes to the Browser.

Browser

Requests a websocket connection

Receives bytes of binary data.

Puts the bytes together to display the image



HOW WE DID IT?

CAR ENGINE

Phone

Captures user selection of buttons/ phone accelerometer reading.

Processes the data and calculates the speed and direction.

Data is sent to server.

Cloud Server

Establishes a connection with the client

Receives data from the client.

If car requests then passes the same data to the car.

Car

Requests Server for data.

Passes the data to the motor shield.

Controls the acceleration and direction of DC motors.

← → ⌛ ⓘ rcteer.swastibhat.com

Camera On Wheels



START SYSTEM

ENGINE START ENGINE STOP Accelerometer Toggle

FORWARD

LEFT RIGHT

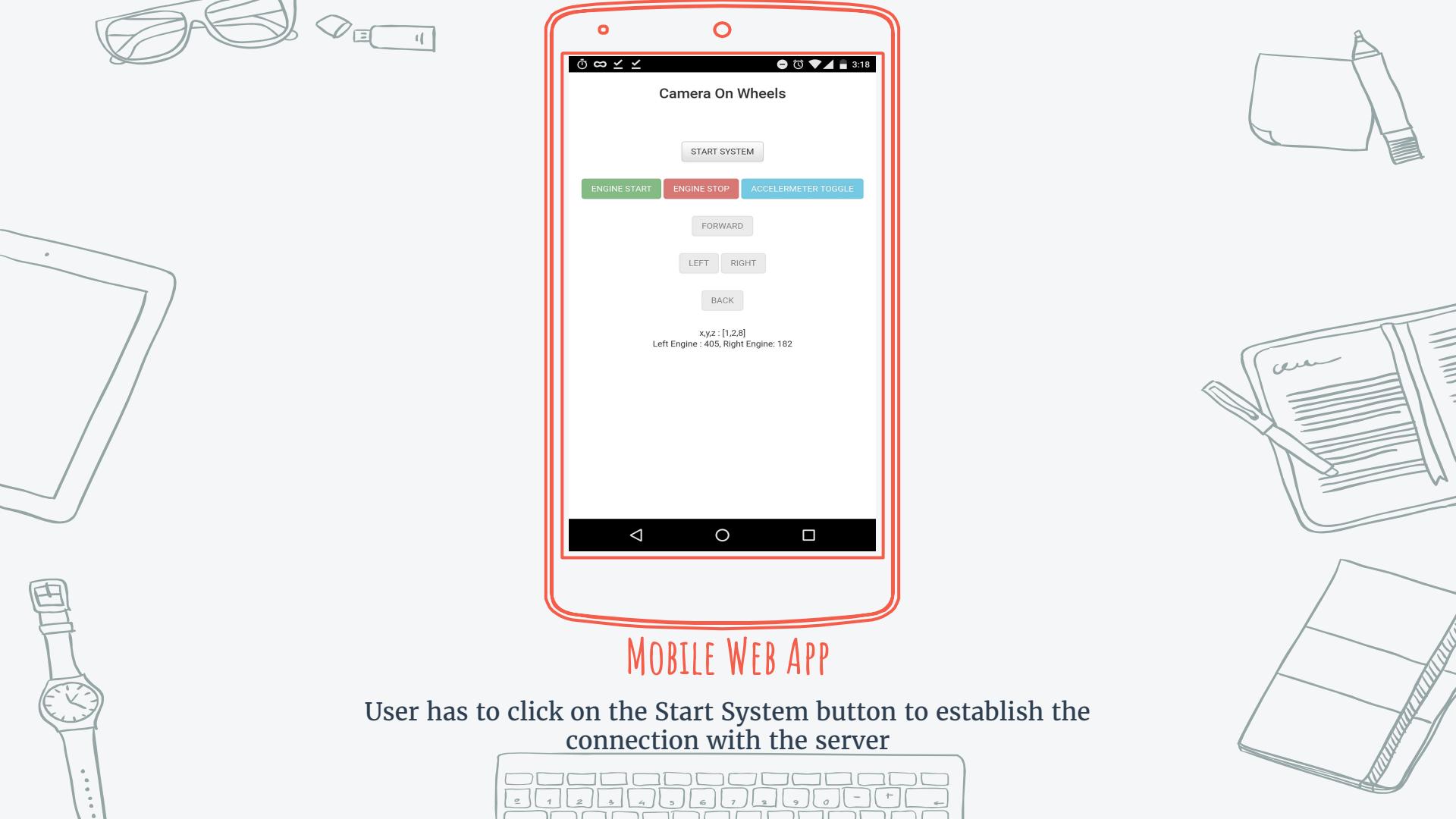
BACK

Accelerometer enabled

x,y,z : [0,0,0]

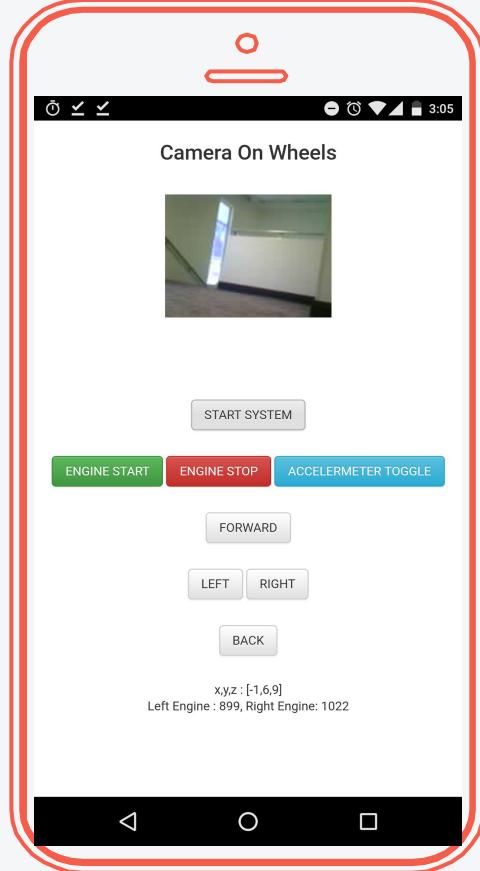
Left Engine : 0, Right Engine: 0

DESKTOP PROJECT



MOBILE WEB APP

User has to click on the Start System button to establish the connection with the server



MOBILE WEB APP

On clicking Start System button video starts streaming

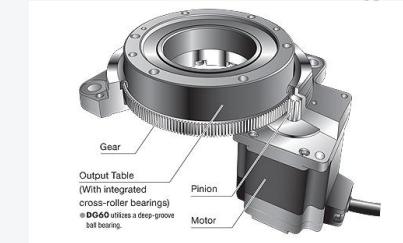
MAJOR PROBLEMS

- ✖ Lack of Documentation
- ✖ Slow video, Blurred image
- ✖ Latency in car



FUTURE WORK

- ✖ Fish eye lens for the camera
- ✖ Actuator to control camera direction
- ✖ A fool proof car casing , better frame



REFERENCES

- ✖ <https://github.com/onurburak9/esp8266-engine-websocket>
- ✖ <https://github.com/onurburak9/esp8266-arducam-nodejs>
- ✖ <http://www.instructables.com/id/Arducam-Mini-With-ESP8266-Wi-Fi-Is-Amazing/>
- ✖ <http://www.arducam.com/arducam-supports-esp8266-arduino-board-wifi-websocket-camera-demo/>
- ✖ <http://cjihrig.com/blog/creating-your-own-node-js-websocket-echo-server/>
- ✖ <http://www.instructables.com/id/Motorize-IoT-With-ESP8266/?ALLSTEPS>
- ✖ <https://github.com/Links2004/arduinoWebSockets>



THANKS!

Any questions?

