

VIGIWHEELS

Your autonomous sentinel



Tahani team



Moad



Johann



Raphael



Oysho



Axel



Aïssatou



Eduardo

Table of contents



Introduction



Overview



Demonstration



Technical Point



Potential Improvement



Why Vigiwheels?



DEMO



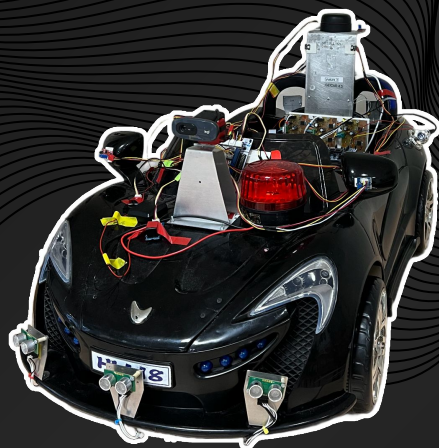
70%

of french industries that
witnessed severe fire incidents
disappeared



85%

of french industries that witnessed
ESP accidents showed remarkable
human and economic damages



- Fire and Smoke Detection
- Pressure Monitoring
- Patrol following a recorded path
- Alert from distance

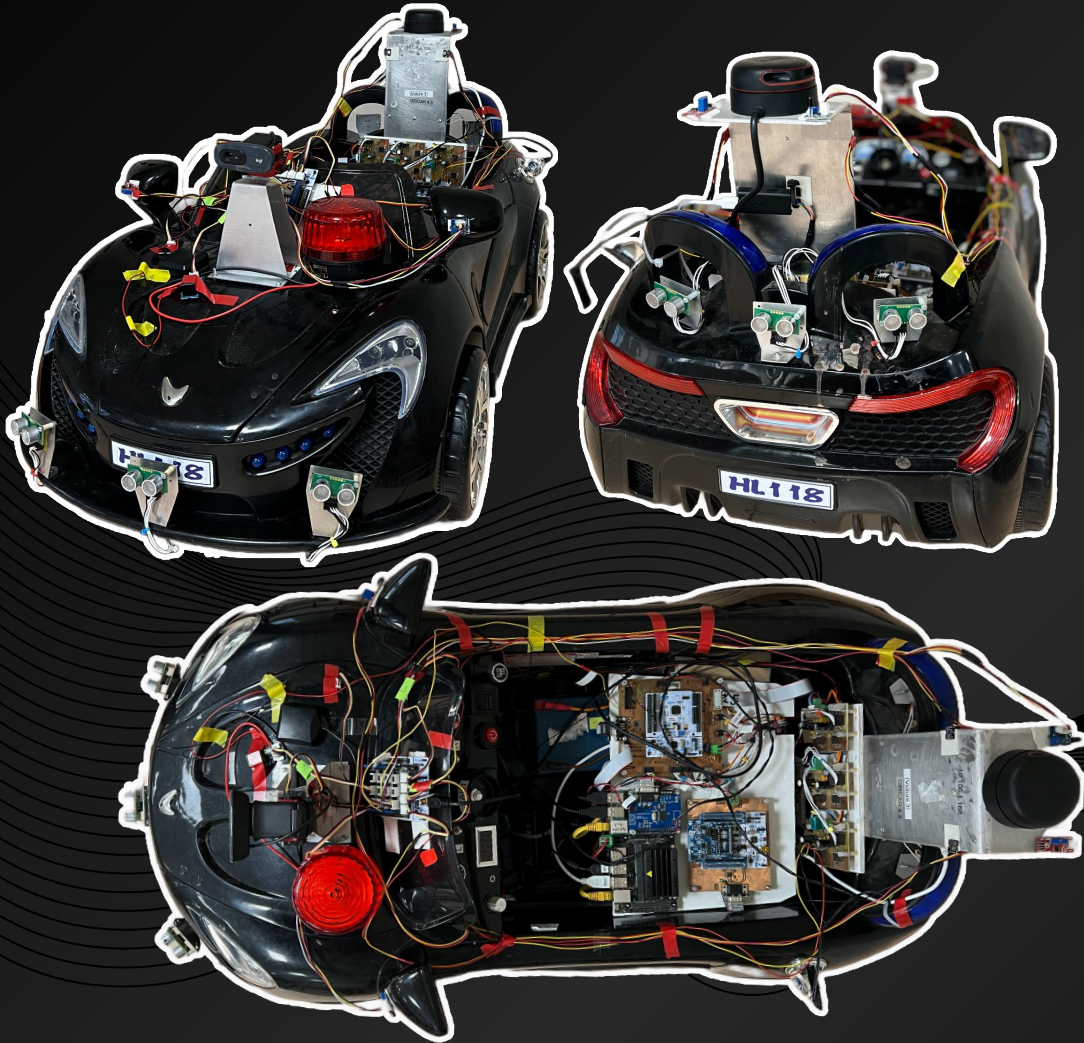


DEMO



Car Overview

Car Overview



Fire & Smoke Detection

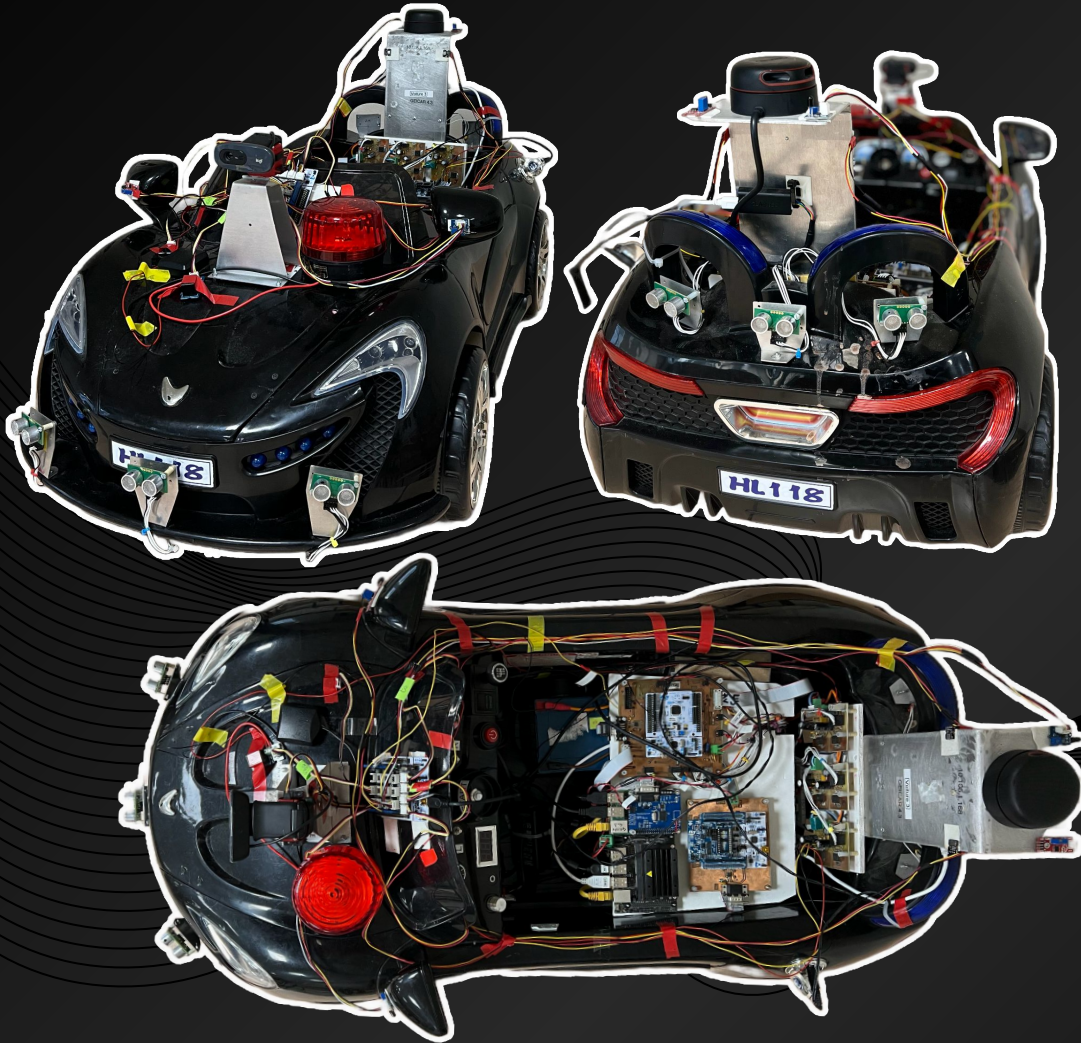
Objective : Enable the car to detect a fire and alert users to the presence of a fire.

- 4 infrared sensors (two analog, two digital)
- 2 smoke sensors
- 1 buzzer
- 1 light beacon

Car Overview – Manometer Reading

Manometer Reading

Objective : The car is able to detect manometers and analyse the pressure level



- Detect and analyse pressure gauge from long distance
- AI running on GPU
- Fast Image processing (suitable fps)
- Alarm triggering if pressure level is high
- Camera is able to rotate in order to search sensor
- Camera detects and follows sensor

Car Overview – Path Recording

Path recording

Objective : Save controller instructions when requested, and replay the command in loop to do a patrol

- Take in count obstacles detection
- The precision depends on :
 - Length of the path
 - Speed variation
 - Level of battery
 - Ground and steer grip
- Record car and camera movement

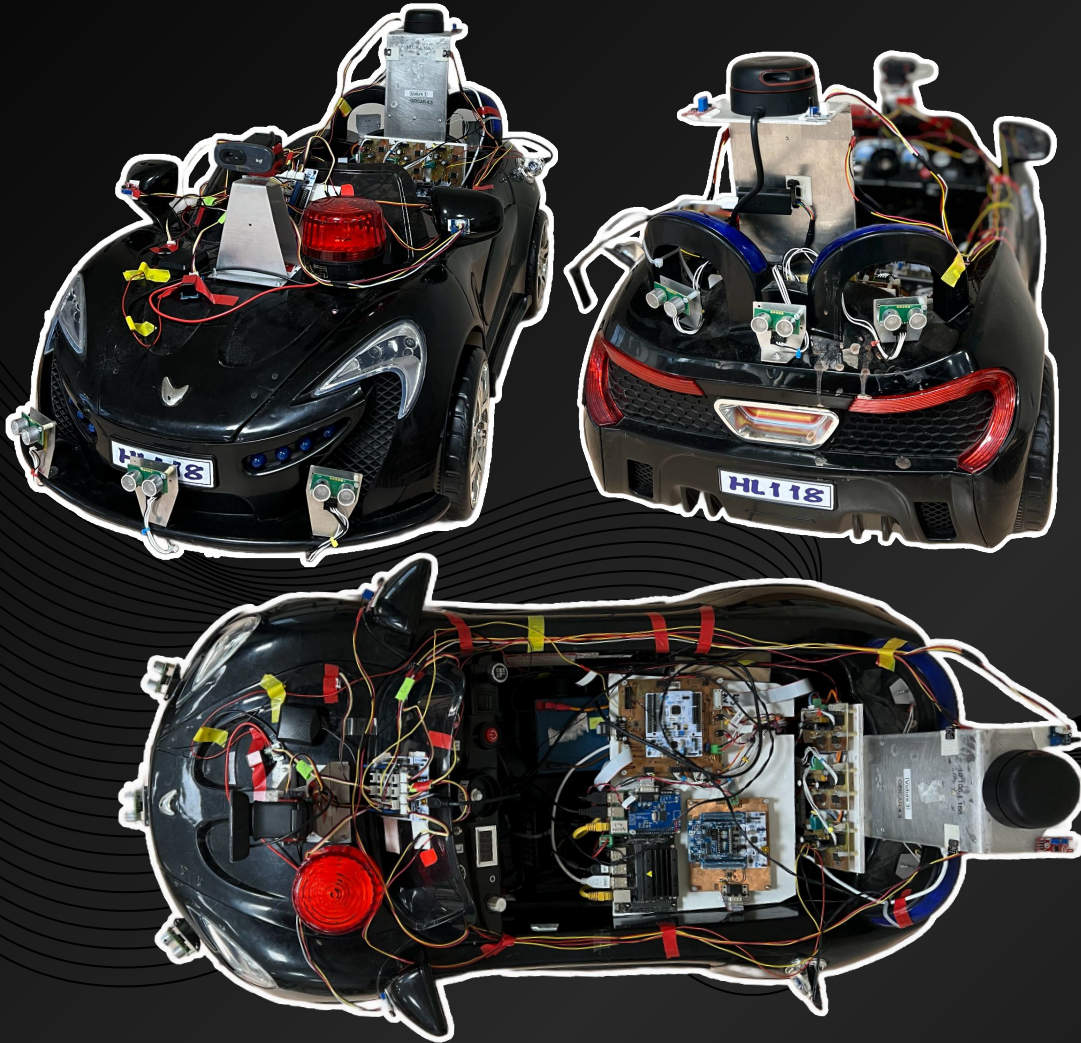


Car Overview – User Communication

User Communication

Objective : Access to car data in real-time through a user friendly website from any location within the GEI building

- Response time of less than 1 second
- All detections are promptly and comprehensively displayed



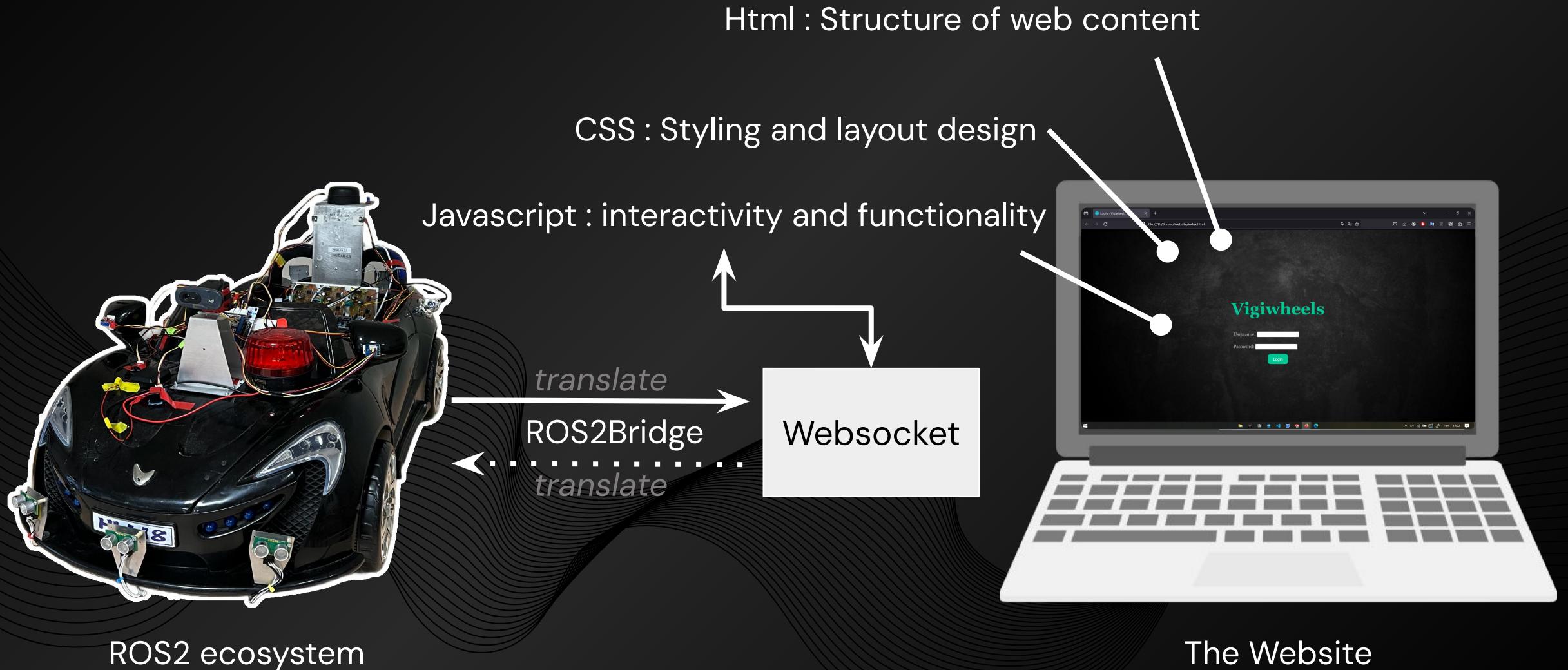


Demonstration

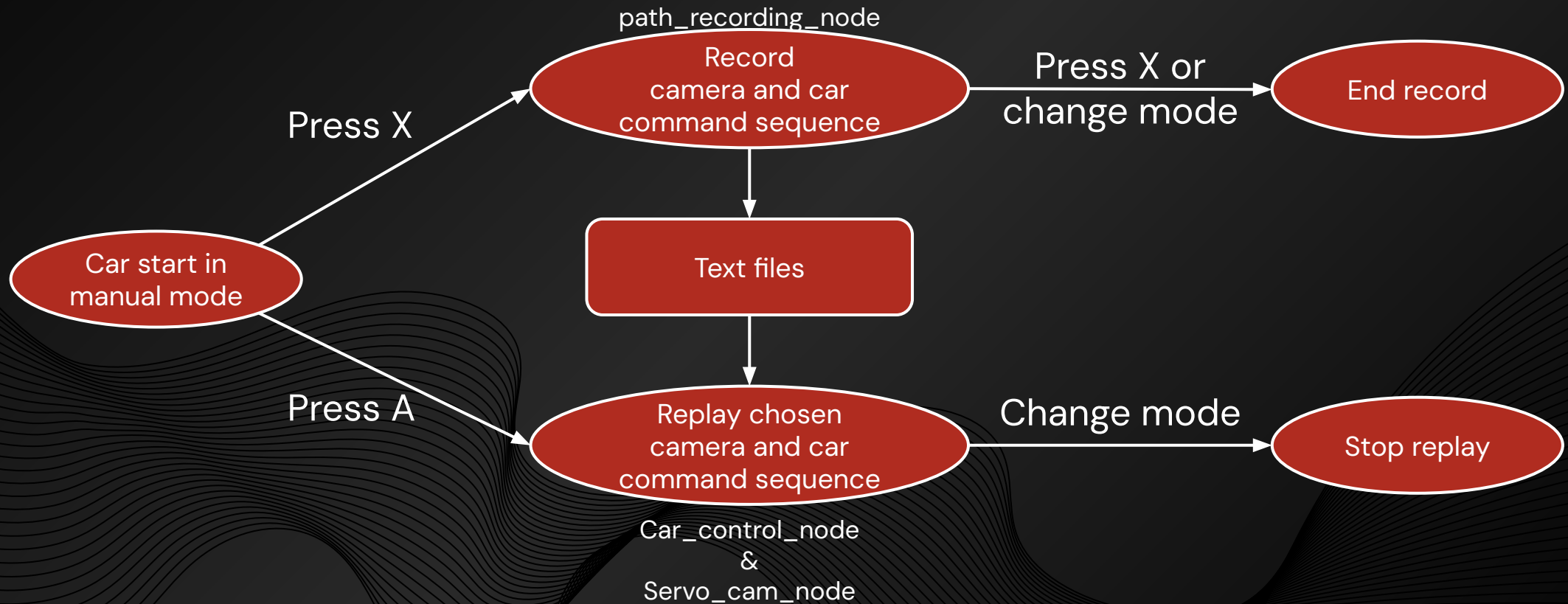


Technical Point

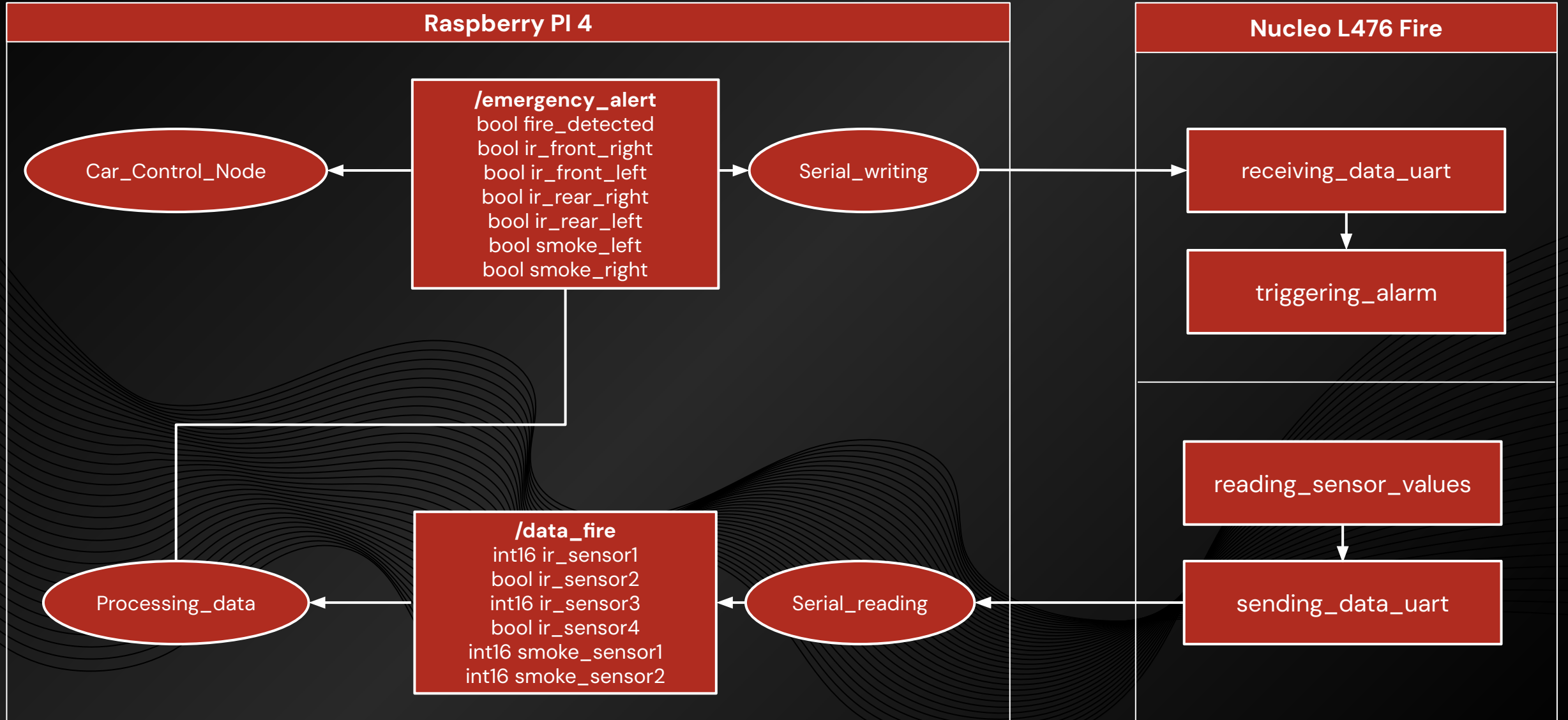
Technical Point – User Communication



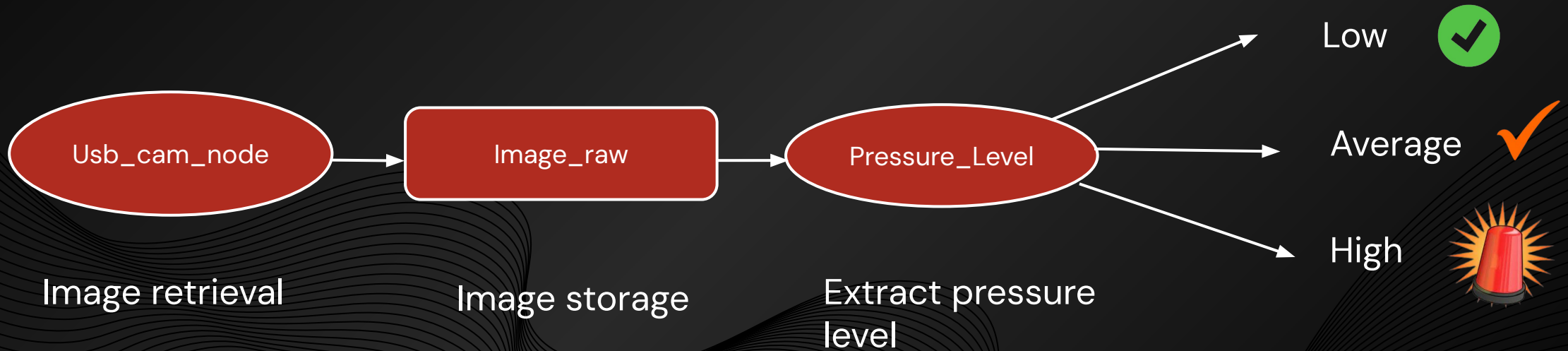
Technical Point – Path Recording



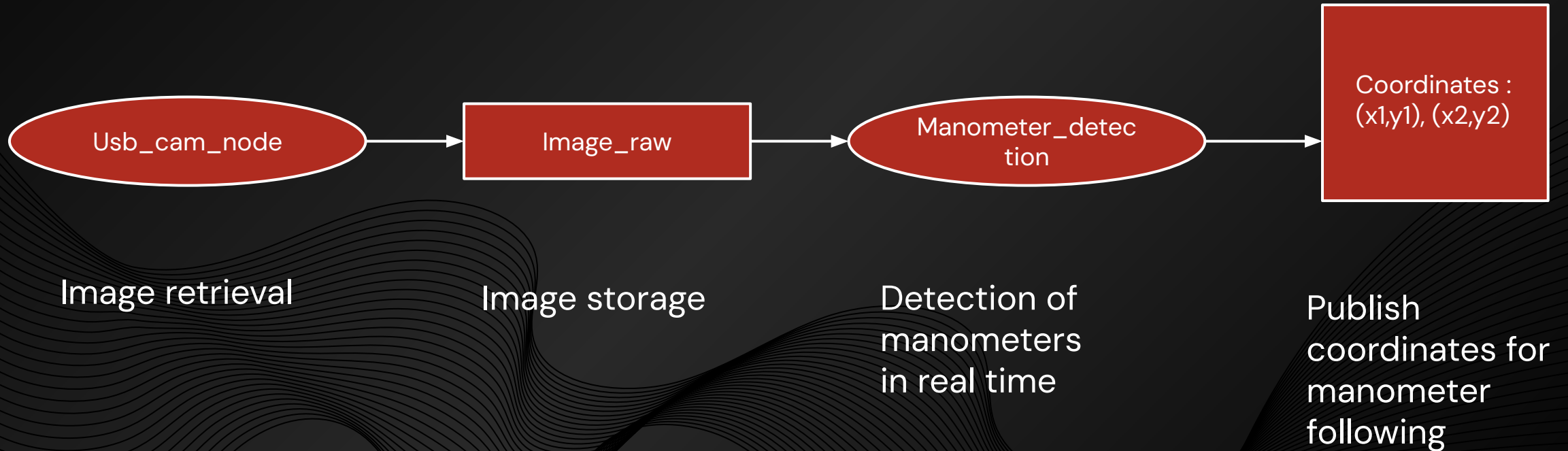
Technical Point – Fire Detection



Technical Point – Manometer Reading



Technical Point – Manometer Reading





DEMO



Potential improvements

Car indoor navigation



Using the slam toolbox of NAV2 to be able to navigate in any building

Remote control



Remotely control the car from the website or an application on phone

Enhance sensors technologies



More precise sensors and IMU implementation for improved environmental perception and data accuracy

Improve the AI models



Enhance capabilities of the car's decision-making to adapt it to a wider range of scenarios

Warn Emergency services



Link the car to the building security system

Indoor navigation
Vigi Wheels
Technology
Sensor
Communication
Autonomous
Smart
Agile
IoT
Team
Safety
Mobility
Actuator
Fire
Future
Intruder
Patrol



Your Thoughts, Please?