Tricycle Project
Dick Dastardly
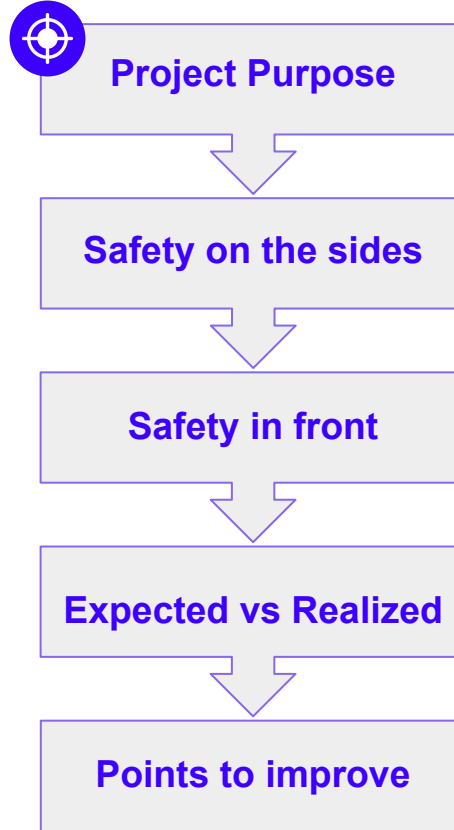# Crystal Ball

Final Review
18/01/2022

-Sprint 5-

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Gautier Martin
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Presentation plan

Project Purpose

↓

Safety on the sides

↓

Safety in front

↓

Expected vs Realized

↓

Points to improve

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Project Purpose

Multiple sensors and actuators integrated to a tricycle, that needs to be conscious of its surrounding and able to autonomously and safely drive itself and its passenger.

- Equip a **tricycle** with **sensors** and use **AI algorithms** to a**ssist the driver**
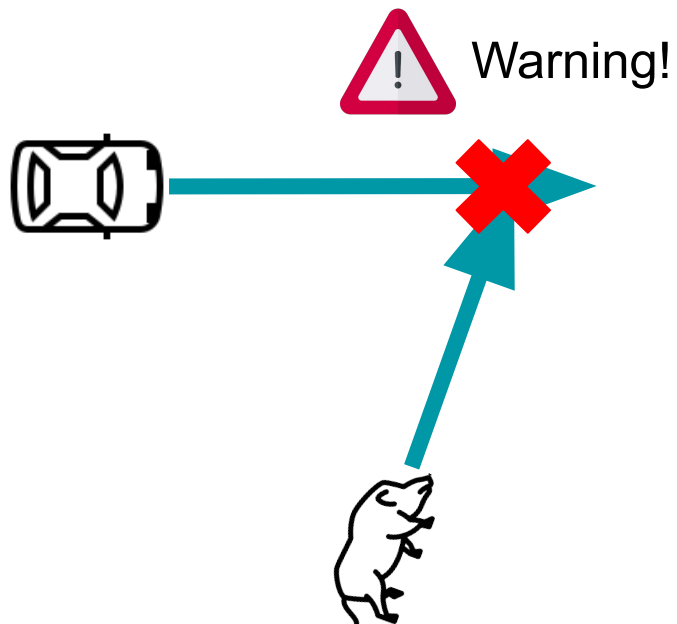- **Warn** in case of danger

- **Identify** road signs, people walking, cyclists, etc.
- **Avoid** personal **injury** or material damage

- **React faster** than humans
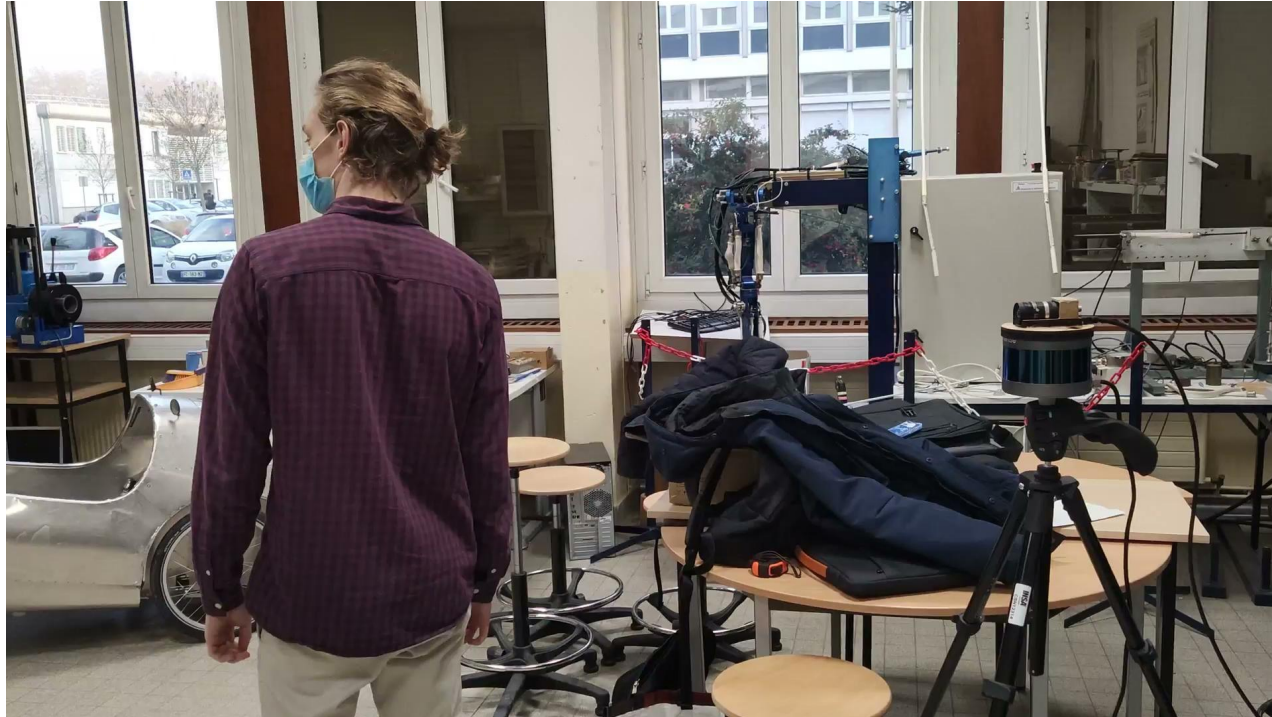- Automate **"conditional" driving**, the third level of automation in driving

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Warning!

LIDAR is more useful in the night as the driver's vision is limited

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Demo :

Technologies used :

RS-LIDAR-16

Projection 3D to 2D

AI for recognition

Camera

Calibration camera-LIDAR
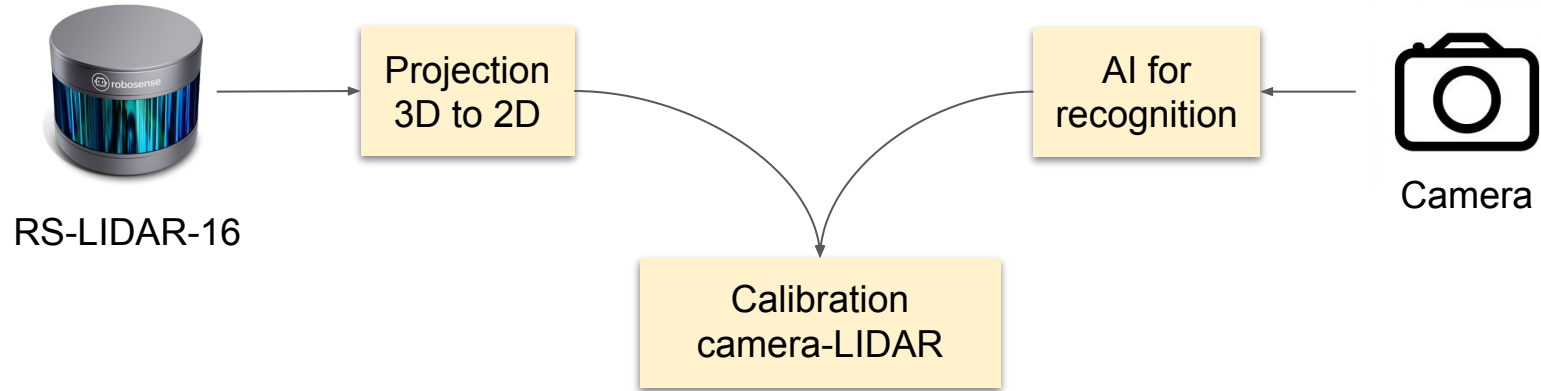
HELLO AI WORLD
NVIDIA JETSON

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Explanation of the first demo :
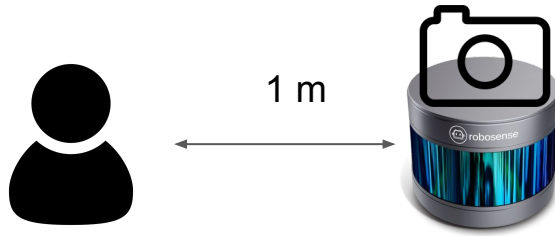
1 m

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Demo :
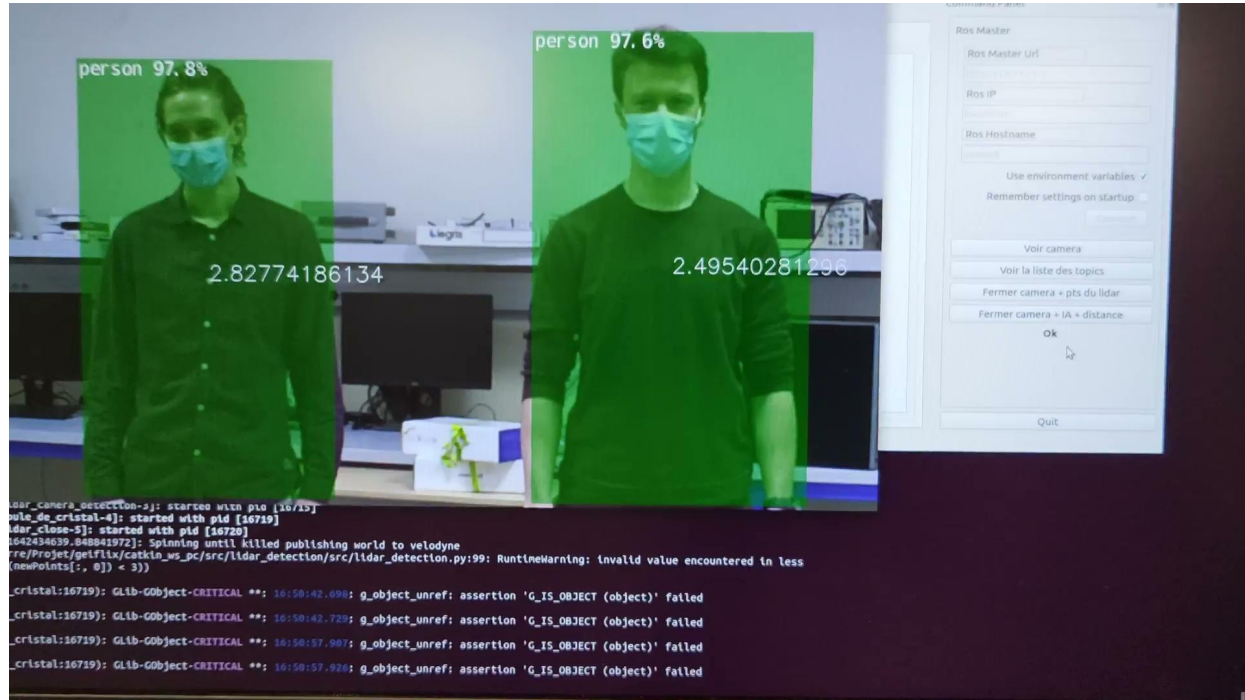
Validation tests :
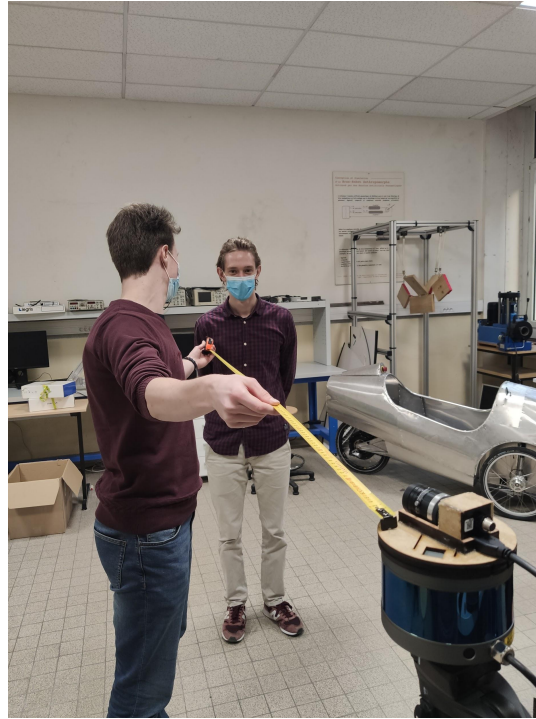
Features

Results

Informations
Distance & type of objects
Level of certainty for each detection

→ Fusion of camera and LIDAR

Display

→ Graphical User Interface

Alarm
Raise an alarm for specific situations

→ Prediction of trajectory

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Software pt.1

- Calibration & field of view synchronisation

- Current trajectory prediction & trajectory prediction when tricycle is moving
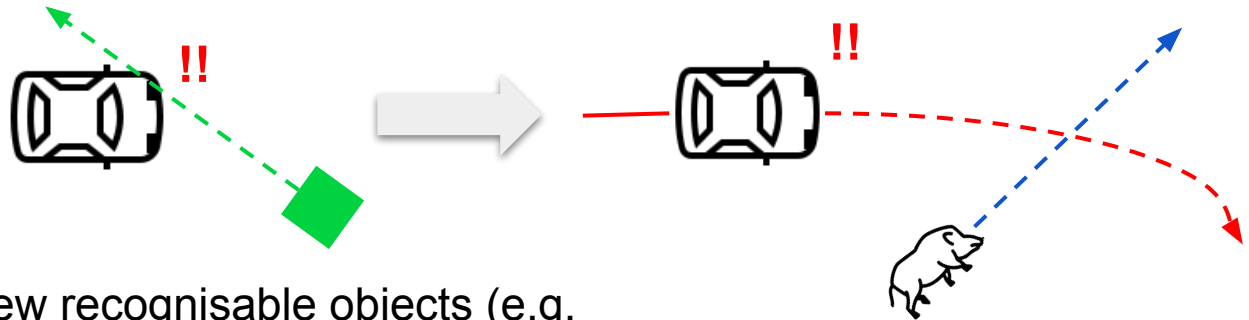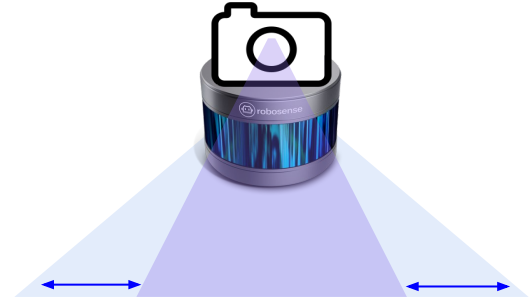
- Learning new recognisable objects (e.g. road related) and remove unused ones with AI

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Software pt.2

- Software optimization

- Make the software cross platform (e.g. mobile phone)

- Check outside performances

Hardware

- Finding other hardware to compute data, the Jetson Nano is not powerful enough

€1,188.00 Tax included

- Changing the camera to a 60fps one would significantly improve reaction time

€429.98 Tax included

- Moving the tricycle, because for now prediction only works for a static vehicle

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Thank you !

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