INSA INSTITUT NATIONAL DES SCIENCES APPLIQUÉES TOULOUSE

PIVOANE PROJECT

Piéton - **V**itesse - D**o**s d'**âne**

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Context

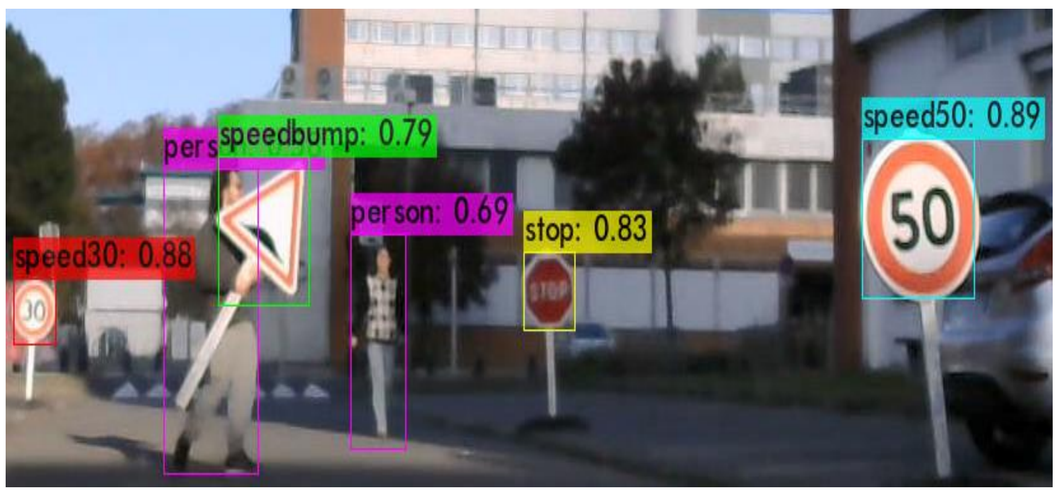
Nowadays there are **many accidents** occurring in the streets due to human negligence. Most of them are caused by an altered psychological state or a moment of inattention. The **autonomous car** is a promising **solution** for this problem providing a means of transportation without being controlled by the driver.

Objectives

Adapt the car's behavior according to the environment detected in different complex situations

- Adjust the **speed** of the car when a road sign is detected
- Stop the car when there are **pedestrians** on the road
- Slow down when approaching a **crosswalk** or **speed bump**

Features

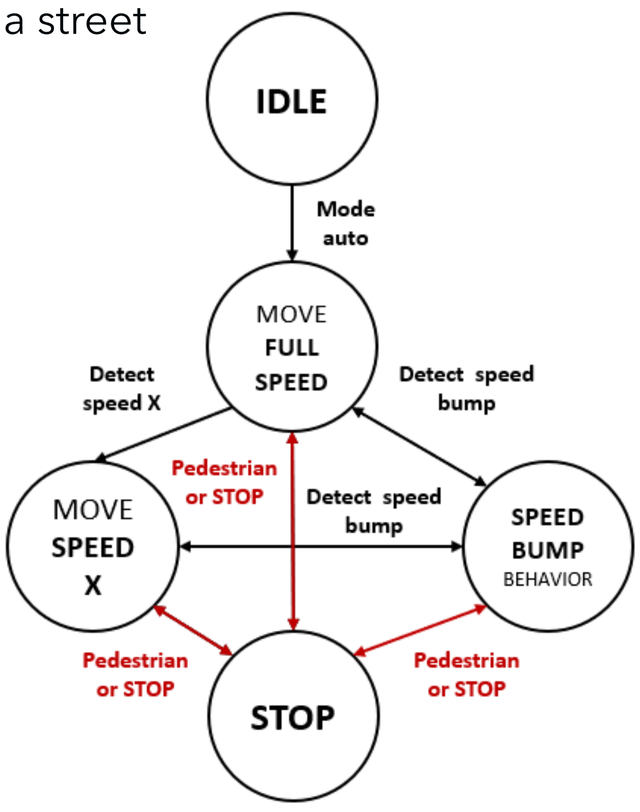


DETECTION

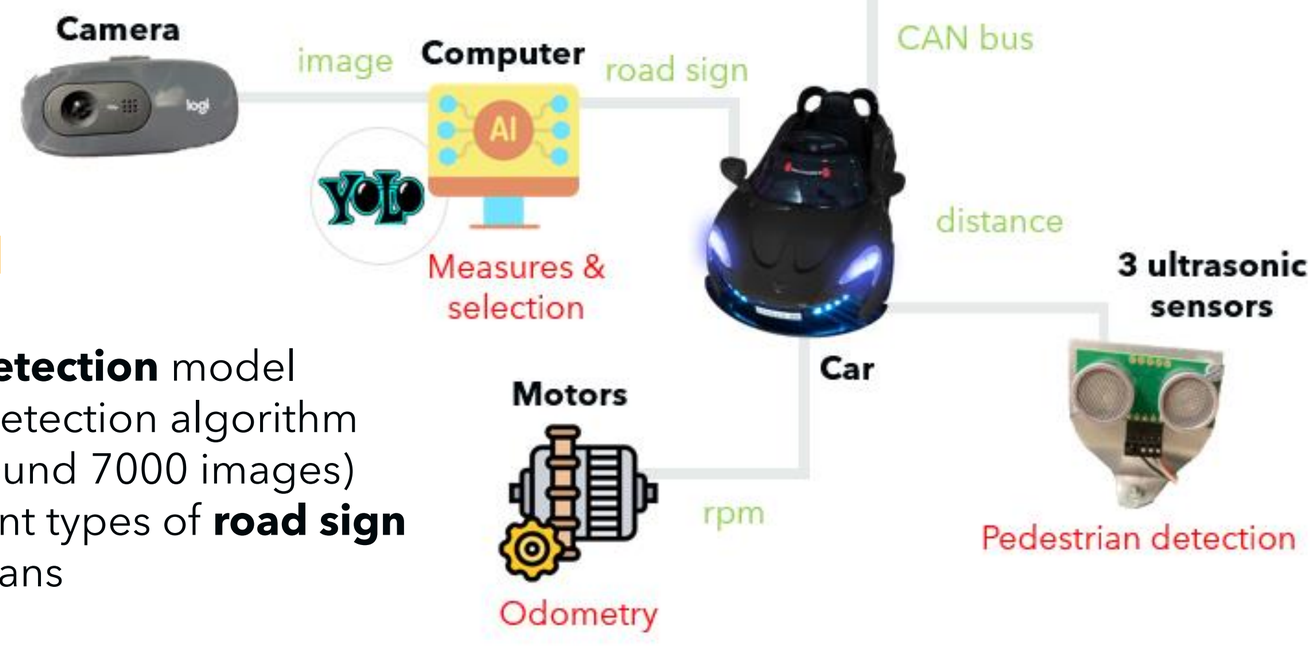
- ✓ Training an **AI detection** model using the **Yolo** detection algorithm with dataset (around 7000 images)
- ✓ Identify 4 different types of **road sign**
- ✓ Identify pedestrians

REACTION

- ✓ Based on the traffic rules, this **state machine** describes the behavior of the car when driving in a street environment



ARCHITECTURE



- ✓ Stop the car right away when a **pedestrian is crossing** the road at a predefined distance

Future developments

This product could be improved by implementing the behavior of the car in front of **other road signs** such as: construction sign, yield sign, etc.
The moving obstacle detection can be improved using **LIDAR** and **sensors fusion**.

SCAN ME

Our GitHub !

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