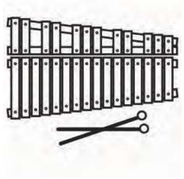
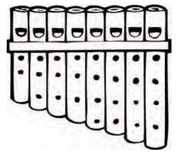
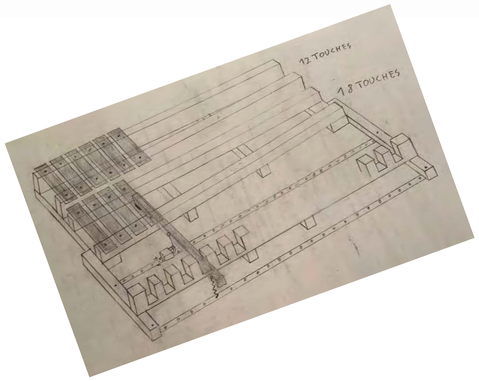
Le Jour des Projets

ESIEE PARIS

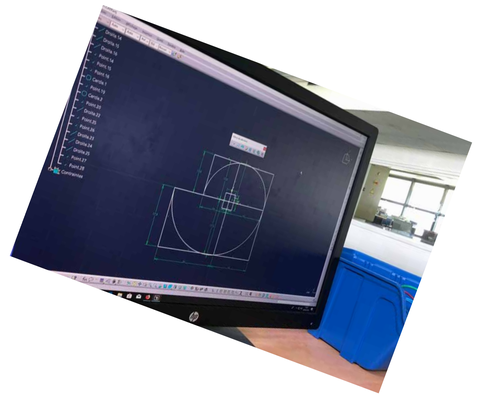




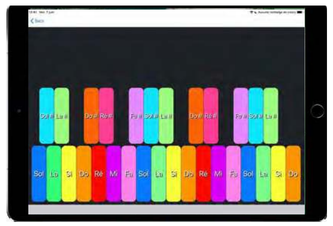
TEXAS INSTRUMENTS



DUET MÉCANIQUE
FLÛTE ET XYLOPHONE



Application IOS



Automatique

Modes : Manuel

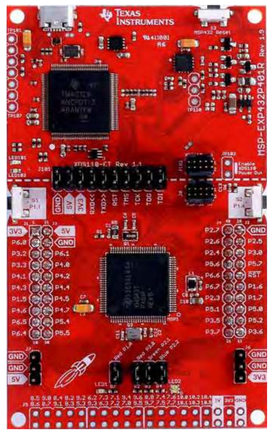
Composition

Envoi d'un message par bluetooth

CC2650 module bluetooth

Transmission des données par protocole UART

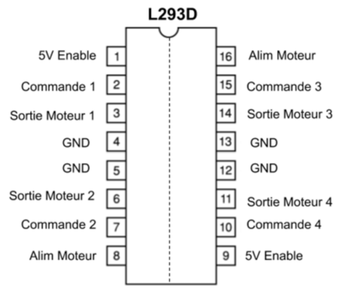
microcontrôleur MSP432



Commande numérique

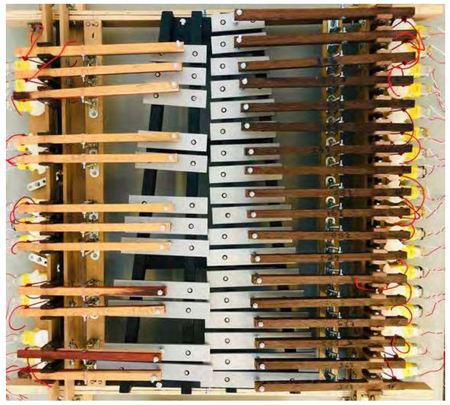
Pont en H

L293D



Délivre un courant au moteur de la note jouée

Xylophone



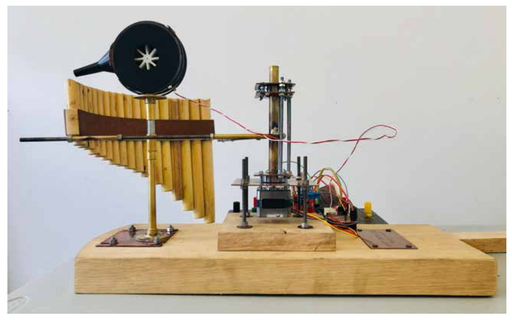
Alimentation souffleur

Flûte

Commandes moteur

boost drv8711

Rotation flûte Moteur à pas



E3 Promo 2021

Réalisé par : Maxime Burchi, William Ekou, Lucas Gratas, Annie Lim, Benjamin Opraseuth, Pierre sakaloff, Jimmy Ung

Suiveur : Louis Trameçon ISYS

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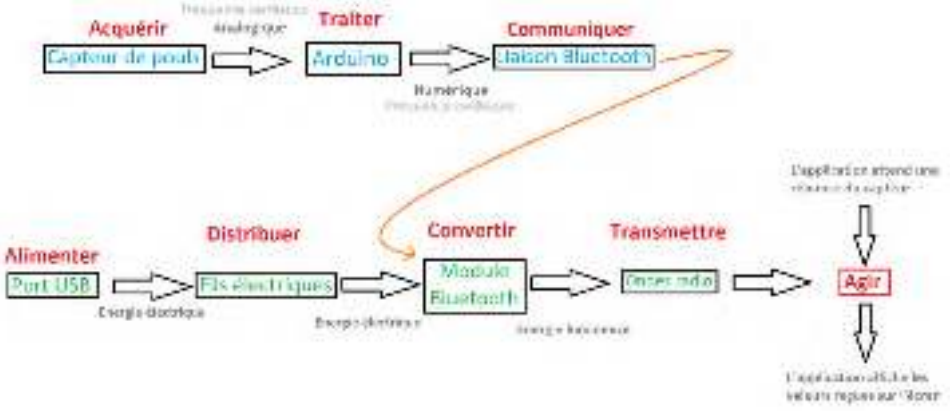
Oxymètre connecté

Objectifs

- Construction d'un oxymètre qui permet d'extraire le rythme cardiaque et le taux de saturation en oxygène

- Afficher les données extraites sur une application mobile

Chaîne d'informations et d'énergie

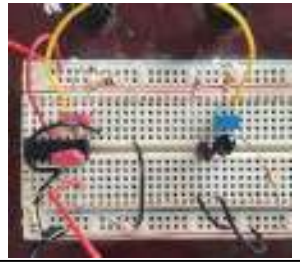


Composants

Module Bluetooth

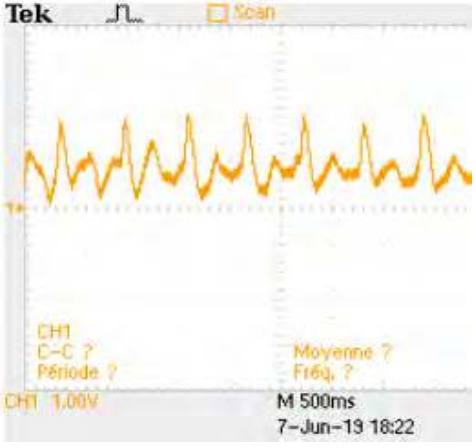
Arduino Uno

Capteur de pouls



Circuit du capteur de pouls

Interface de l'application Android créée avec son logo



Représentation graphique de la fréquence cardiaque

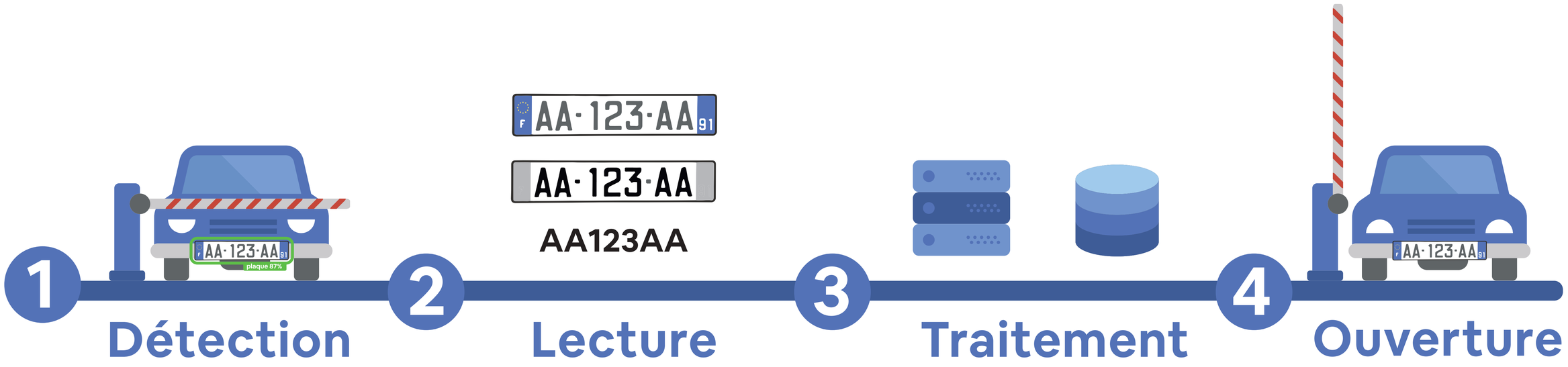
Kanesalingam Thushyanthan / Mairesse Robin / Temeniati Maria [E1] Tuteurs : Lissorgues Gaëlle / Dupont-Legendre Sylvain

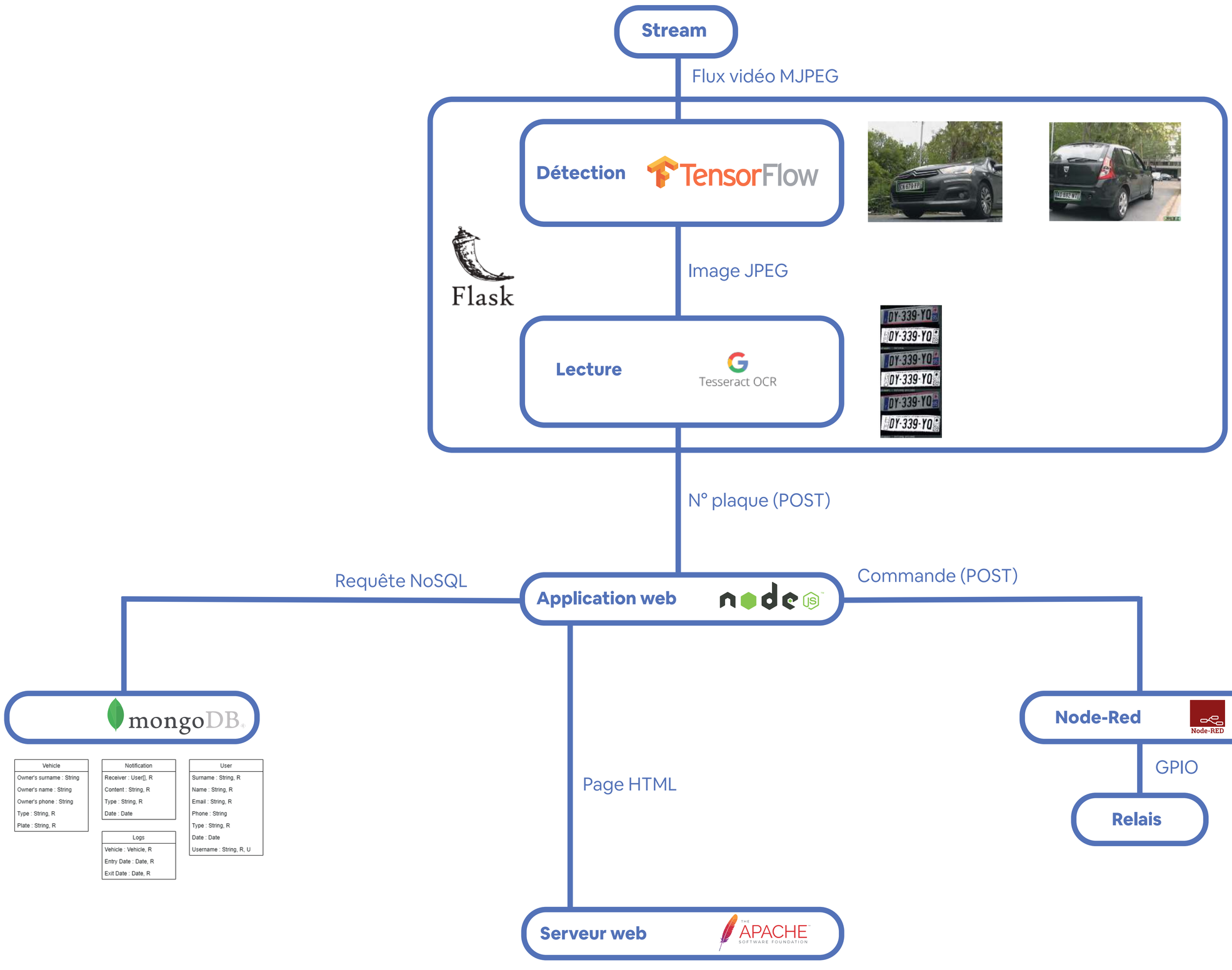
Le Jour des Projets

ESIEE PARIS

Parky

Application de gestion de parking automatique pour l'ESIEE Paris





Suiveur : Imen KACHOURI
Antoine GELIN Sébastien
ZHOU Baptiste ADAM
Kévin TELLIER

E3 INFO

une école de la

CCI PARIS ILE-DE-FRANCE

People Counter with 3D Time of Flight Camera

Objective: Detect and count people located in an enclosed area in real-time using light-intensity-images (amplitude) and the measured distance relative to the time it takes for infrared light to be reflected on the camera (phase). With this information, increase significantly the accuracy without store facial data to grant privacy.

Description: Using a **Texas Instruments** OPT8241 ToF 3D Camera [Figure 1], we obtain sequences and preprocess them to reduce noise and normalize the background. Afterwards we detect faces using Deep Learning algorithms, and bodies using structural analysis and shape descriptors to have a confident, 3D based people counter.

[Figure 1] TI ToF Camera

1 Stream

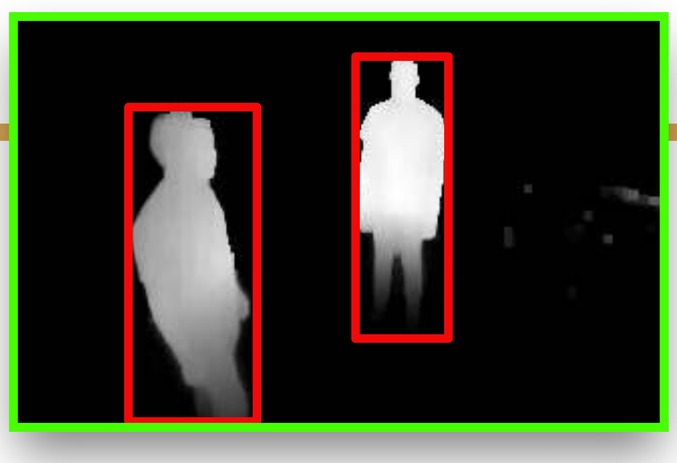
The camera generates phase and amplitude frames. We apply gaussian and morphological filters to separate the subjects from the background. A key benefit of the ToF camera is the ability to use depth to segregate foreground from the background.

2 Face Recognition

To recognize people with high confidence, we apply Tiny Faces deep learning architecture to the amplitude image, this architecture is able to detect faces at different scales, light levels and rotations giving better results than conventional approaches.

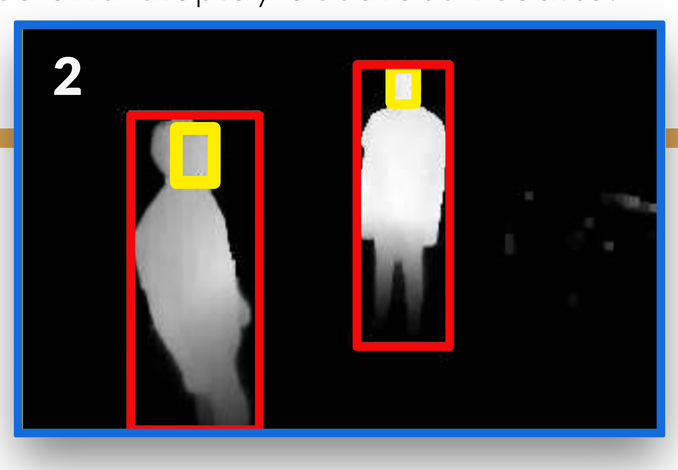
3 Body Recognition

To detect multiple bodies regardless of their position within the frame. Implementing connected components we separate one body from the other depending on the distance, we obtain the recognition of each one.



4 Recognition Intersection

We aim to an accurate system that would not confuse images of faces to actual people, for that reason, we intersect both recognitions to consider only faces inside bodies and display accurate results.



Results: We achieved a full human detection that validates both facial and body features with depth data to provide a more accurate recognition that follows a non conventional approach, without infringing peoples' privacy.

Future steps: Migrate to technologies such as GPU or FPGA to reduce detection time and implement people tracking to obtain more information about what the people do in the area.

Applications:

- **Automatic ventilation** control systems in enclosed buildings.
- **Data gathering** for marketing purposes.
- **Wagon occupancy** for train/metro logistics.

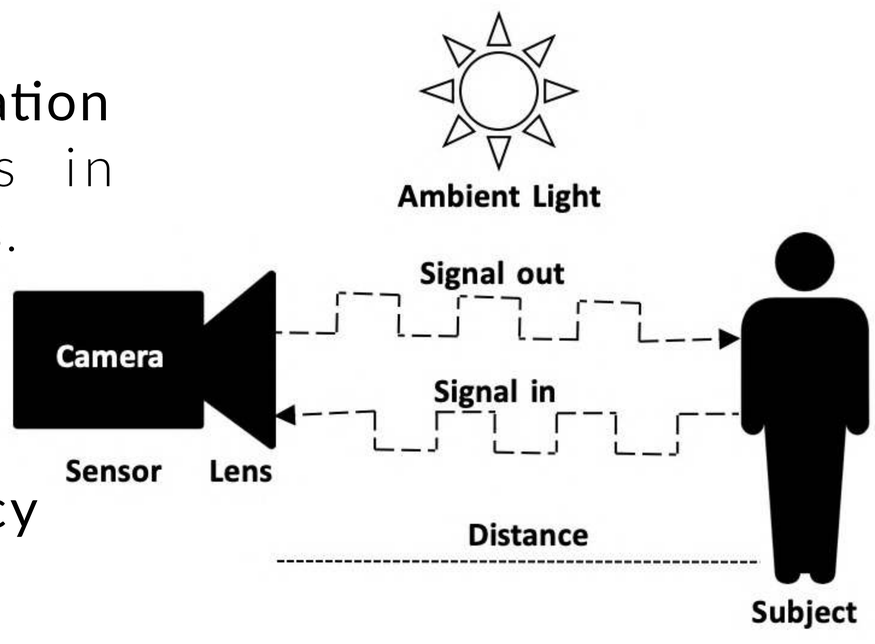


Figure 2. Time of Flight (ToF) measures distance relative to light traveling time.

Students: David Ramirez, Filiberto Vázquez, Manuel Neri PERSO

Advisors: Eva Dokladalova, Elias Barbudo, Rosemberg Rodríguez

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Révélateur de nouveaux talents

ESIEE PARIS

blender

unity

Pitfall

2

Arènes

2

Personnages

Arena Fighter 1 v 1 PC

Maxime Schoenberger
Hugo Guerif
Davina Luximon
Yannis Kabir
Dan Nacache
E3 Majeur Informatique

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