# Safe Roads: Road safety platform for the ATCLL infrastructure

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## Abstract

**Following increasing growth of devices connected to Wi-Fi and the evolution of IoT, the concept of a modern inter-connected city is gaining popularity. Therefore, it was proposed the task to monitor certain areas of the city, in order to extract conclusions upon the patterns of people and vehicles flows in those areas. This work focuses in creating a platform to analyze the data from the various sensors as well as social networks, to find instances of road safety, alerting authorities and the community.**

## Data gathering

To gather data we used both the ATCLL sensors located around Aveiro, which contain both speed radars and cameras, as well as twitter. From the **sensors** we are able to gather information regarding the number of cars above speed limit, as well as record the times of day certain intersections had high amounts of traffic. From **twitter**, with the use of a machine learning model, we will detect whenever a tweet is made regarding an incident in Aveiro, and will be able to inter-relate them with the sensor data.
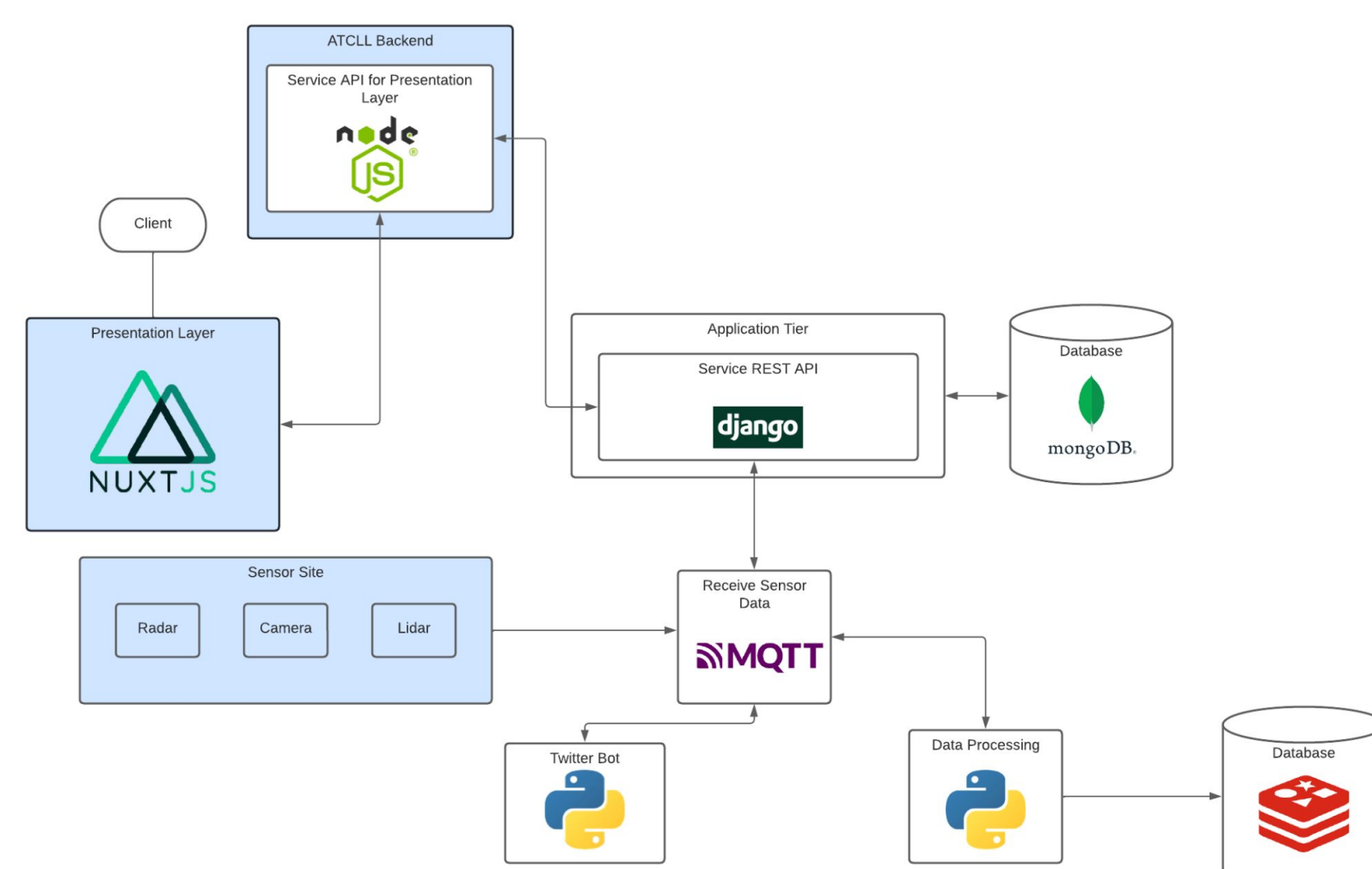


Fig 1- Architecture Diagram

## Twitter Bot

Whenever our system detects an alert, it will inform the community by publishing a tweet with the alert information.



**Secured Roads**
@SecuredRoads

Anomaly detected in Esquina dos Bombeiros Velhos at 21h32

There was an unusual amount of traffic in the last hour at Esquina dos Bombeiros Velhos entry. 46% less average car speed. 100% more cars

Source: Secured roads anomaly detection algorithm

Fig 2- Example of a tweet detected by our model.

## Alert Platform

With our platform, a person is able to check the status of the roads, in terms of traffic or if there was an accident.
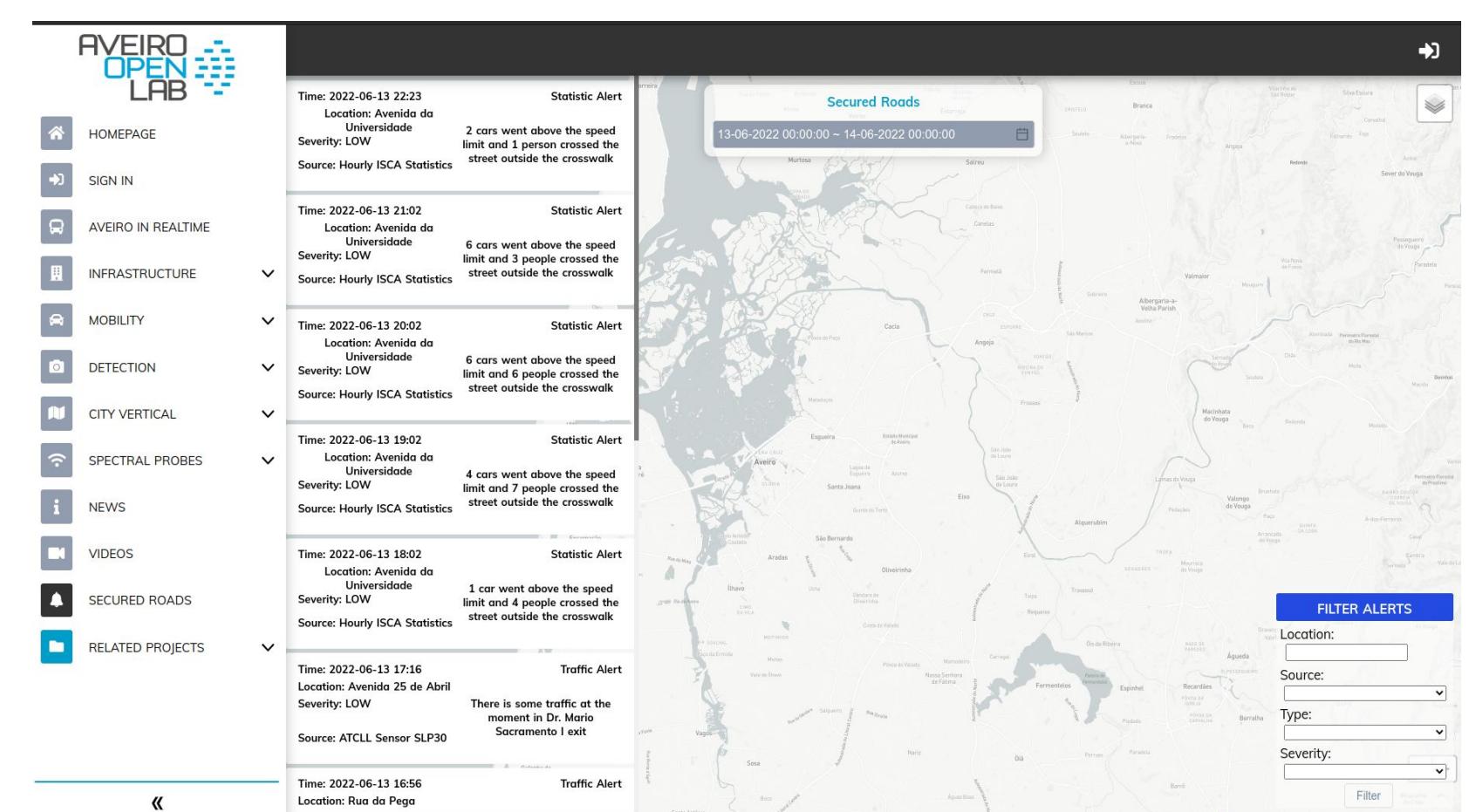


Fig 3- Secured Roads Page on ATCLL Website

## Results

After a week, thanks to the data gathered, we are able to observe some good results, such as: the average speed per hour, traffic intensity throughout the day and the number of cars over the speed limit, information that authorities can use to make decisions on which roads require bigger presences.
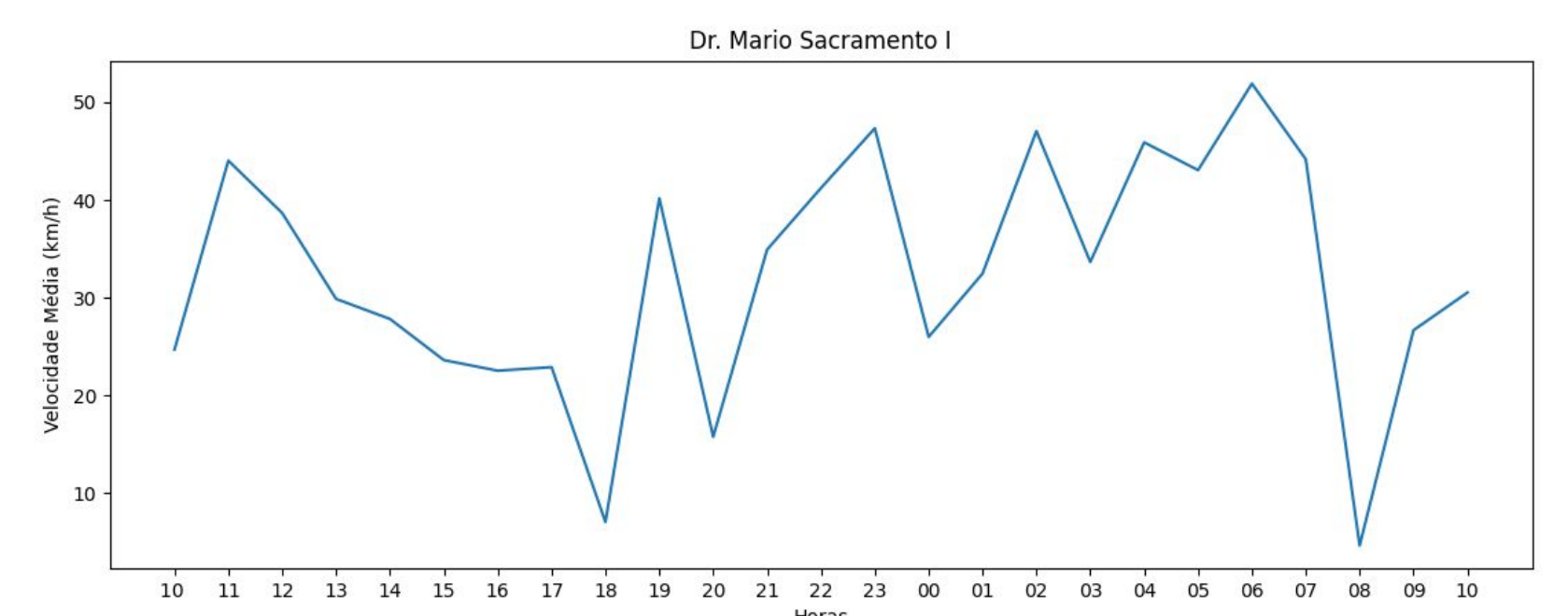


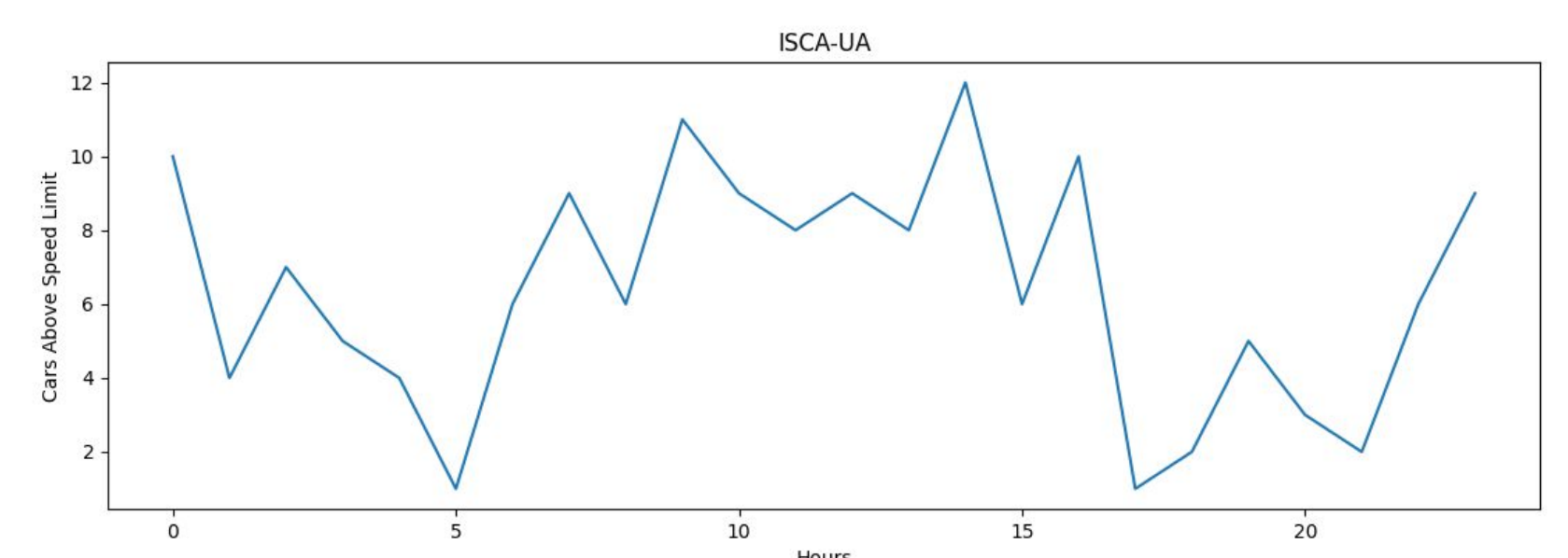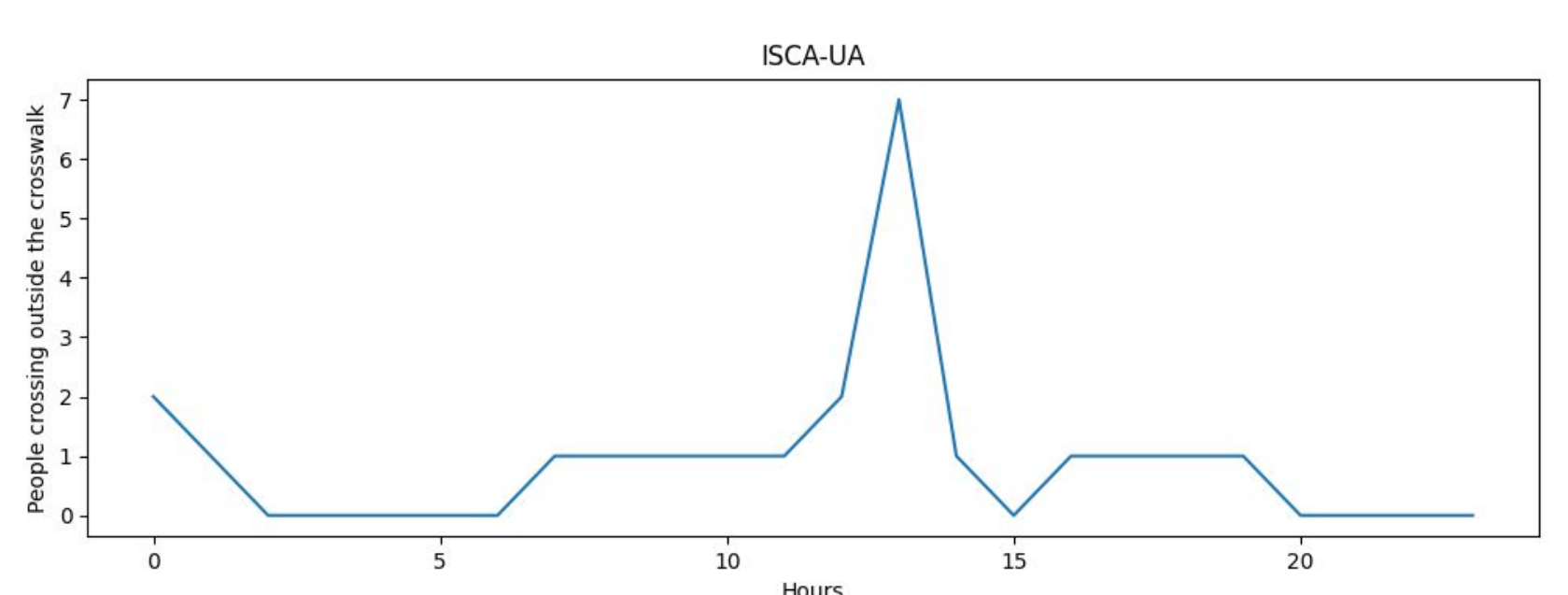Fig 4- Average Car Speed per hour over 24 hours



Fig 5- Cars Above Speed Limit over 24 hours



Fig 6- People crossing outside the crosswalk over 24 hours

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