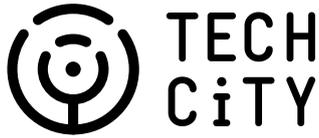




2nd Edition

Aveiro Urban Challenges

*Edge Computing for LIDAR sensors
focusing urban mobility*



Challenge Proposal

Edge Computing for LIDAR sensors focusing urban mobility

Scope of the challenge

The objective is to develop an Edge Computing solution to analyse and process data obtained through the LIDAR detection of vehicles and people in the public space. This solution allows the detection of people, vehicles or any other moving objects within a maximum radius of 40-50 meters. However, LIDAR sensors generate significant amounts of traffic (unprocessed data), requiring telecommunications channels of many hundreds of megabytes per second, that is, it requires data processing with the equipment, called edge computing.

Within the scope of the Aveiro Tech City Living Lab, the partner Instituto de Telecomunicações will install LIDAR sensors in two locations with high mobility requirements and susceptible to road accident events or high concentration of people:

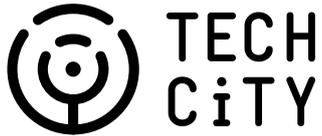
- . Roundabout of Universidade Avenue with street Assoc. Humanitária Bombeiros Voluntários de Aveiro
- . Roundabout of Praça General Humberto Delgado, including the south side of street Homem Cristo and Lourenço Peixinho Avenue.

These sensors have the capacity for three-dimensional detection of fixed and mobile objects, with an approximate radius of up to 50m

Challenge's development

The challenge is to develop software embedded in edge computing units to detect:

- Dynamics between pedestrians and vehicles on the crosswalks;
- Concentration of people;
- Incorrect use of pedestrian crosswalks;



- Braking and accelerating vehicles near the crosswalks;
- Vehicle speed and counting.

It is also requested that the solution developed guarantees:

- The use of communication provided by the Aveiro Tech City Living Lab telecommunications network to connect the data of the Edge computing unit and the central server;
- The implementation of a web page for monitoring data and indicators on a central server in a Cloud environment;
- The integration of data by API for the Aveiro urban data platform.

Challenge Mentorship:

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