

Dissertação de Mestrado em Engenharia Informática (2019/2020)

Title: Mobile Sensors Data Processing for the Identification of Road Events with Cloud Computing

Supervisor: Prof. Nuno M. Garcia

Co-supervisor: Dr. Susanna Spinsante (Università Politecnica delle Marche, Ancona, Italy)

Summary

Sensors available in mobile devices, *e.g.*, accelerometer, gyroscope, magnetometer and Global Positioning System (GPS) receiver, can be used to identify different patterns to identify road events. Nowadays, traffic applications have been developed with the use of cloud computing in order to process the sensors' data related to traffic and road conditions or driving styles. However, the use of mobile devices for this process includes the challenges related to the limitations of the reduced power processing and memory and limited battery lifetime.

The present topic focuses on the identification of relevant events caused by motion, captured by the sensors and labelled by the user, storing this data in the cloud for further mapping in a geographical map. The main purpose of this research is to fuse the different types of data combined with the user's feedback and develop a machine learning method to identify critical zones in the road and other abnormal situations. These situations should be marked on a geographic map for further information of the drivers.

Tasks

- T1 – Technological background study;
- T2 – Review the State-of-the-art;
- T3 – Requirements Analysis;
- T4 – Design and construction, including integration;
- T5 – Testing and evaluation;
- T6 – The writing of the dissertation.

Expected Result

In this research work, the following deliverables are expected:

- A validated computational tool;
- A publication describing the method and the validation results.

Timeline

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
T1	X	X	X						
T2		X	X	X					
T3			X	X					
T4				X	X	X			
T5						X	X	X	
T6					X	X	X	X	X

References:

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3. Pires, I.M., Garcia, N.M., Pombo, N., Flórez-Revuelta, F., Spinsante, S. and Teixeira, M.C. Identification of activities of daily living through data fusion on motion and magnetic sensors embedded on mobile devices. Pervasive and Mobile Computing, 47, pp.78-93, 2018.
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