

Dissertação de Mestrado em Engenharia Informática (2019/2020)

Title: Road Event Mapping Method for Mobile Devices with Cloud Computing based Technologies

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Summary

Mobile devices embed several sensors, including accelerometer, gyroscope, magnetometer and Global Positioning System (GPS) receiver, and they can be used for the acquisition of different types of data. In recent times, cloud computing is widely used in traffic applications for storing information related to the road condition or driving style and processing the associated data. The complexity of this process is centred in the continuous data acquisition, taking into consideration the limitations of the device in terms of the processing capabilities and battery life.

The present topic focuses on the detection of relevant events caused by motion and captured by the sensors, storing this data in the cloud. The primary purpose of this research is to acquire the data from the sensors available in the mobile device and create a geographic map with the important points based on the relevant events caused by motion, in order to present some situations.

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:

1. Xu, Guangxia, et al. "A survey for mobility big data analytics for geolocation prediction." *IEEE Wireless Comm.* 24.1 (2017).
2. Pires, I.M., Felizardo, V., Pombo, N., Drobics, M., Garcia, N.M. and Flórez-Revuelta, F., 2018. Validation of a method for the estimation of energy expenditure during physical activity using a mobile device accelerometer. *Journal of Ambient Intelligence and Smart Environments*, 10(4), pp.315-326.
3. Bryant, Nicola, et al. "IoT and smart city services to support independence and wellbeing of older people." *Software, Telecomm. and Computer Networks*, 2017 25th Int. Conf. on. IEEE, 2017.
4. Wang, Zhi-Bo, et al. "Human motion tracking based on complementary Kalman filter." *Wearable and Implantable Body Sensor Networks*, 2017 IEEE 14th Int. Conf. on. IEEE, 2017.