Round Trip Without Sleep

Master in Computer Engineering

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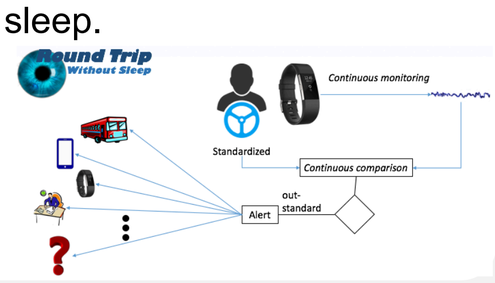
1ST SYMPOSIUM OF APPLIED RESEARCH

BACKGROUND

In current times the technology focused on the health and well-being of the human being, has been making considerable progress. Mobile devices and "wearable" among other equipment with multiple sensors, are being used more frequently. The increased quality and accuracy of these devices increases their reliability and credibility, allowing them to be used in more sensitive contexts, particularly in the health area. There is already a wide range of applications of such devices in clinical practice, for example, photoplethysmography is used clinically to measure blood oxygen saturation or heart rate or electrodermography to measure the galvanic response of the skin. However, the devices that do so are not intended for constant use required for continuous monitoring. With the appearance of a set of devices that have photoplethysmography and electrical conductivity sensors, the possibility of continuous monitoring of biometric signals is opened.

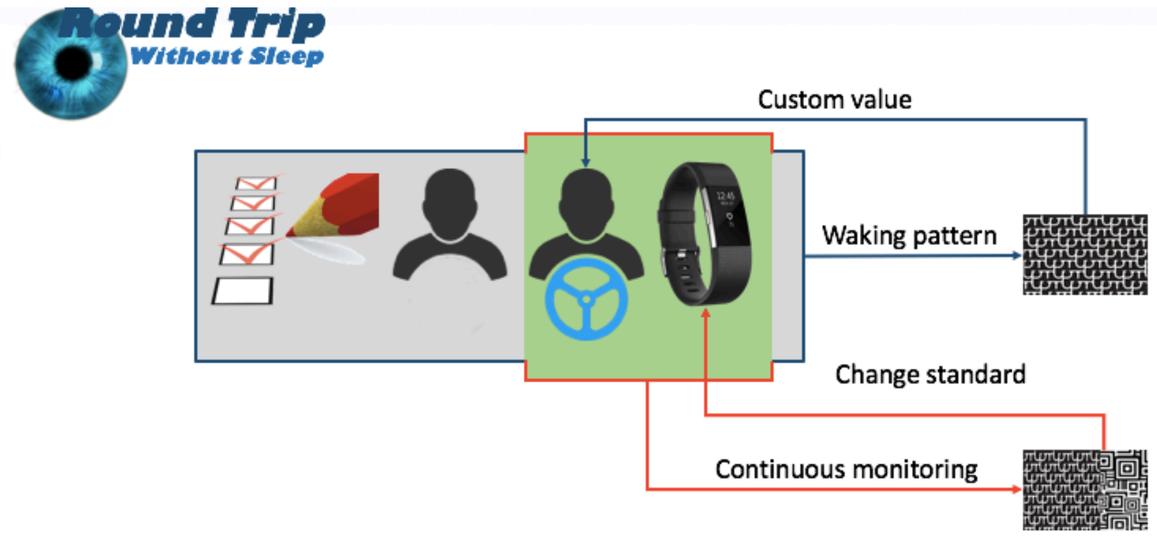
OBJECTIVES

The goal is the development of a mobile or wearable device application that, based on a set of values related to heart rate and variation of heart rate, body temperature, galvanic response of the skin, allows to detect signs of sleep during driving and Activate this or other device associated with the driver that awakens you and alert you to the need for rest.
It is intended that the application can be used by any type of driver, but mainly in professional drivers. Machine learning techniques will be adopted for the classification of the driver and the definition of his basal state, and for the prediction of sleep.



METHODOLOGY

In the first phase the devices will be distributed by a set of drivers, who have agreed to collaborate on the project, and will be monitored continuously. The device must collect the biometric data and send it to an associated mobile device.
These data will be analyzed in order to understand the biometric measures that allow to evaluate the sleep. With this information and with the data that continues to be collected we will use prediction and classification algorithms to analyze patterns of behavior associated with sleep and, from these predict future sleep state. Naturally, if there are not two people alike, learning algorithms should be created that fit each user.



RESULTS AND CONCLUSIONS

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