



m-Health: Mobile Computing and Health Monitoring

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There are no doubt that cell phones, or more recently, smart phones, are the most extended electronic devices over the world. However, it is well known that their capabilities are, in the most of cases, excessive, due, users only need a 15% of them. Apart of the communication, storage and process, it is needed to mention others like sensors that can be embedded: Accelerometer, Gyroscope, Magnetometer, Barometer, Light sensor, South screen, GPS, WiFi, Buetooth, GSm/CDMA Cell, NFC, Camera (front and back), etc. However, as I mention before, we still only use a poor percentage of his power.

One of the most important areas for using these devices is m-Health. Despite there are not consensus for m-Health definition, from my point of view, the main goal is health monitoring without intrusion. That is, regarding the sensors embedded and minimizing the interaction, we can receive feedback about vital signs. Of course, it is not enough to apply only communication capabilities of smart phones but, also, they can process the received information in order to propose the correspondent feedback for each situation. In this sense, technologies such as Bluetooth takes an important role in the transmission of data from vital signs sensors like Glucometer, Blood Pressure, Heart Rate, and so on. At this moment, are the m-applications for health that taking part in the monitoring process by showing messages for recommendations, storing information that will be send to physicians, controlling alarm situations, etc. Thus, MAMl Research Lab has elaborated a strategy for control whatever the vital sign [1,2,3] by means of software architecture that allows receiving information for each patient and disease.

Apart of vital signs and, thanks to smart phone accelerometer-embedded, it is possible to control physical activities. Not only for fitness purpose but also, for health concerns. Many applications can be found in the mobile market about fitness. For us, others aspects of physical activity are more important. We are talking about activity recognition to fight the obesity, especially for childhood [4]. By controlling calories consumption for each physical exercise and diet, it is

simply to obtain a diagnosis and recommendations for achieving normal weigh for each case.

Regarding others movements control by the accelerometer, it is possible to apply m-health application to rehabilitation area. Harms, legs and others body parts, can be supported for rehabilitation at home by smart phones and, as the same way, offering recommendations [5].

Finally, gait analysis is another important area to study. Through it, it is possible to detect elderly frailty and the prevention by physical exercises [6]. Fighting this elderly state, we can prevent falls and the subsequent broken bones like hip. In this case, elderly people have to be hospitalized; after that, they have to pass the surgery and rehabilitation that constitutes a big step back in the life of elderly. Another subject in the gait analysis process is the detection of dementia. Some studies argue that, analyzing the gait variables (step/stride lengtht, speed and variability, cadence, etc.) it is possible to determine when elderly people are initiating with the dementia state.

All above mentioned, makes attractive this research area by combining the efforts for improve the use of smart phones, regarding their potential, with minimizing the interaction, even, "disappearing". These areas are involved into two general ones, Ambient Intelligence [6] and Ambient Assisted Living [7].

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