Information Technologies: Opportunities and Challenges in Personal Healthcare Systems

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Abstract

The well-being of a person consists of 2 aspects: the physical body well-being and the mind well-being (the perception or the feeling of well-being). Technology development makes it possible to massively produce cheap sensors for personal use. The data collected, if being properly analysed, can provide objective and comprehensive personal health information. The information helps us to understand the well-being of the person and then further offers the opportunity to develop a high quality personal healthcare system for the well-being of the person. In this talk, I will report our preliminary findings in applying modern information technology to personal healthcare systems. We construct a brain activity level model by using EEG signals to objectively measure the effectiveness of meditation, detect mental fatigue and boredom, and comprehend human emotions. Also we have used accelerometer and GPS data to assess sports performance and training enhancement, leg muscle injury prevention and recovery monitoring, and fall prevention for aged people. In addition, the ubiquitous nature of accelerometer and GPS technology make it possible to deliver personal healthcare services for people in physical excise. Then, we exploit the potential of Kinect device in monitoring the movements of aged persons in their houses to prevent falls. Finally, we point out some remaining challenges and possible opportunities in using information technologies to deliver personal healthcares.