Public Abstract

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Title:AN ENHANCED MOBILE AMBULATORY ASSESSMENT SYSTEM FOR ALCOHOL CRAVING STUDIES

Currently, most methods in clinical psychology research primarily rely on questionnaires and interviews with examiners instead of providing real-life subject behavioral and psychology data monitoring and collecting services. This thesis presents an android-OS-based mobile Ambulatory Assessment System, for psychology research -- especially alcohol craving studies – to improve current methods and provide real-time data monitoring, collecting and processing. As current generation smartphones provide more powerful communication platform, embedded with robust built-in sensor suits and vigorous processing and storage capabilities, smartphones play an increasingly significant role in various sensing tasks such as activities monitoring personal health surveillance and environment. This system consists of four parts: a wearable sensor (Equivital EQ2 sensor) that measures physiological data, an Android smartphone, a web server and a data analysis module. The smartphone is responsible for collecting and recording physiological data from the wireless wearable sensor, interacting with the users to conduct various surveys, and uploading data to the web server. The server is responsible for data processing, computation, and visualization. Utilizing machine learning methods, data from the sensor and survey build models that predict how various psychological disorders cause alcohol or other substance cravings and emotion dysregulation. The system has been deployed in a field study of alcohol craving, and initial data collected from real subjects proved promising.