

Public Abstract

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Title:WEARABLE SENSING ANALYSIS - IDENTIFYING ALCOHOL DRINKING FROM DAILY PHYSIOLOGICAL DATA

In practical psychology research, questionnaires and interviews with examinees are commonly used. Besides, to study about certain human behaviors such as our subject – alcohol drinking craving, it usually lasts for several days which could be costing and time consuming, to both researchers and examinees. Previous work in our lab provided a smartphone-client and server based distributed system which does not need participants to go to the clinic doing any paperwork nor any invasive blood or medical-electronic based tests, so that saving time and money for better researching purposes. The system called mAAS and started to collect precious data from our recruits. Improvements that I made to the system are presented in this thesis. Also, a new data analysis pipeline is built and evaluated. Modern wearable technology is integrated without extra burdensome equipment in our system. Simple, they would be just smartphone and a vest suite with sensor in it, those are already our daily-carry personal stuffs. Smartphone application will be in charge of communicating with sensor suite and server wirelessly and safely. We then can get large numbers of detailed physiological information about participants in their real life. Data preprocessing is applied to get cleaned data. Features about ECG and RIP are extracted afterwards. As a result, involving machine learning methods, we can deal with classification on these features and give out pretty good performance on understanding and analyzing tasks. In this thesis work, alcohol drinking activities are identified from daily physiological data through the pipeline as presented.