

Critique 6 | Week 8 | Disha Singh

Ubiquitous Computing can play a defining role in the development of futuristic healthcare that can better assist people in improving the quality of their lives. The most interesting case study for this assignment was the different approaches taken by the articulators of the studies regarding blood pressure and cocaine abuse. Whilst one focused on the application and functionality of smartphone application regarding soft technology such as in built smartphone applications, the other regarding cocaine abuse focused on the development of wearable technology to track drug use and the effects between cocaine induced subjective states such as euphoria and compulsive drug seeking behavior.

Seismo is an innovative smartphone application that measures and tracks blood pressure. A major distinction between this application and previous iterations of software that enabled smartphone blood pressure tracking is the use of an accelerator to capture Seismography which is the use of tracking vibrations caused by the movement of the blood and valve activities as the heart beats allowing for accurate measurement of aortic valve opening time. Better than using phonographic methods that measured sound but rather tracking vibrations is a more accurate way of articulating measurements. Some limitations of the application stem from the fact that as shown in the study those with shaky hands could not measure accurately the blood pressure rates as wearable devices which function better at regularly tracking due to their maneuverability and fitting.

Ubiquitous physiological sensing technologies to measure drug use have been around for multiple computing generations. However, there is a lack of the ability to continuously and passively measure the user state in ways that shed more light on the complex relationships between cocaine-induced subjective states such as craving/ euphoria and compulsive drug-seeking behavior. A lack of wearable technology due to the underexplored field of applicability of wearable sensors to detect drug related states. This study relied on the use of electrocardiographic and respiratory signals collected from a wearable chest band.

Limitations previously in the tracking of vibrations through a smartphone also showed up when obese patients were not able to get accurate results and previously aforementioned shaky hands which obstructed data collection. Wearable bands did not suffer from such afflictions as the hardware could accurately track measurements due to their proximity to the patients and the direct contact it spurred.

A key major commonality between the statistical correlation and measurement was the use of linear models making them easy to deploy and garner results. A Pearson correlation was used in the statistical analysis and the inference of results. A wearable solution seemed more feasible in the monitoring and development of holistic models of complex relationship as compared to the limitations of a smartphone application which relied on the limited capability of a hardware available of pre existing phones. Thus, in conclusion and as a technical opinion it is of paramount importance to understand that unless smartphones include or are created more technological advanced with better hardware for trackers a smartphone application is severely limited by its impact to provide accurate results and thus a wearable device holds the edge at least in the near vicinity of time to better understand healthcare patterns and attributing calculations to a specific ailment in patients rather than general calculations with sub par equipment which may further dampen the development of ubiquitous healthcare solutions.