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Sensor Informatics and Quantified Self
J-BHI Special Issue

With increasing availability of sensor enriched smart, wearable devices, the knowledge about our own health and wellbeing is also evolving. It is no longer just limited to disease progression or the effect of therapeutic measures provided in clinical settings. Such a trend in sensor informatics has given rise to the big personal data, which is set to influence the future of healthcare. The *World Health Organisation* (WHO) defines health as "*a state of complete physical, mental and social well-being and not merely the absence of disease of infirmity.*" Preventing disease through promotion of healthy lifestyle choice is a potentially cost-effective approach to modern healthcare challenges. Choices such as diet, physical activity, sleep, smoking and alcohol, have all been associated with many medical conditions.

With the future of healthcare is shifting from reactive to preventive medicine, made possible by systems approach to disease through integrated diagnosis, treatment, and prevention, we are more focused on the quality of life and our individual wellbeing. As sensors get smaller, smarter and increasingly pervasive, the possibility of personalised, predictive, preventive and participatory medicine becomes increasingly realistic. Novel sensor informatics can allow the detection of disease at an earlier stage, stratify patient management with optimised and individualised treatment, and directly involve patients in both immediate and long-term continuous monitoring of therapeutic responses. In addition to device level developments, the myriad of data generated continuously in real-time represents one of the major challenges in sensor data analytics.

The purpose of this special issue is to address key topics in sensor informatics and quantified self, which include, but are not limited to:

- Novel sensor designs and smart embodiment with consideration of ergonomics, design aesthetics and seamless user interaction;
- New platforms shown to be effective for self-tracking of physical activity, caloric intake, sleep quality, emotion, gait, posture and other factors related to personal well-being;
- Sensor data analytics, fusion, pattern mining/recognition, behaviour profiling, data visualisation and user feedback related to quantified-self;
- Inference through direct physiological data and surrogate signs for pervasive monitoring of personal wellbeing and behaviour;
- Social and psychological aspects related to self-tracking practices and influence of individual and community health;
- Impact of pooled population data on stratified patient management, individual drug responses, new therapies and targets for drug discovery;
- Disease focused exemplars and case studies (e.g., management of diabetes, obesity, autism, sleep disorders, cardiovascular and neurodegenerative diseases);
- Idiographic methods that provide personalized long-term analysis, while facilitating insights across participants and advancing scientific understanding of health and wellbeing;
- Policies, security, privacy, quality control and validation of personal wellbeing data and influence on general healthcare management.

Priorities will be given to papers reporting original work supported by long-term analysis, carefully designed studies, large groups of participants, and supplemented by on-line data or resources that can be shared by the research community.

Submission of manuscripts

Submitted articles must not have been previously published or currently submitted for journal publication elsewhere. As an author, you are responsible for understanding and adhering to our submission guidelines (http://jbhi.embs.org/for-authors/). When submitting, **authors are requested to choose "Sensor Informatics and Quantified Self" in the manuscript type to indicate that the paper is intended for this special issue.** The managing editor for coordinating this special issue is **Dr Benny Lo**.