Healthcare Oriented Implementation of Wearable Devices

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Increasing popularity and widespread use of wearable devices present novel opportunities to monitor changes in individuals' health status. Wearable devices can collect large sets of biometric data. A variety of commercial interfaces exist that display this information to users, yet the clinical implications of these large datasets remain unclear. For users, the ability to detect possible changes in health contributes to the drive to quantify the self. For healthcare providers, data from wearable devices present a complicated challenge centered around interpretation of data, correlation with disease states, and ethical frameworks surrounding data stewardship.

Designing, selecting and implementing new wearable devices in healthcare requires a multidisciplinary approach. Coordination between device manufacturers, data analysts, engineers and clinicians are vital to developing wearables that will produce clinically relevant and actionable information. This mini-track explores key aspects of the continuum of wearable device development, deployment and evaluation in healthcare through a series of manuscripts.

This year's mini-track focuses on how wearable sensors are changing the methods in which clinicians think about and diagnose disease. Early warning for various health conditions is advancing due to sophisticated on-board data analytics for wearables. Adoption of these wearables can be evaluated through the use of social media. The first paper in this mini-track uses social media to explore user perceptions and reactions to popular commercially available wearables, and synthesizes this information into recommendations for design, connectivity and functionality features. The second paper provides a systematic review of wearable sensors for healthcare applications. The author will present data on the disease states, parameters measured, and target populations, and will provide recommendations for future research based on these findings. Finally, we will provide an example of a novel wearable device, SwellFit, which measures a common medical condition, peripheral edema. The author will discuss early device development and evaluation. Following the presentations will open the forum for discussion on the material presented, and how this can be immediately applied to research, commercial and clinical endeavors. We anticipate that discussion in this mini-track will help investigators think about how to evaluate existing commercial wearable devices and how social media may provide organic, population level feedback on adoption of wearables.