

## Body Sensor Networks for Personalized Medicine

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Over the past several decades, there have been remarkable advancements in body sensor networks, encompassing wearable, implantable and ingestible technologies to measure various health and wellness parameters. The widespread adoption of smartphones, smart watches and fitness trackers have generated a wealth of digital physiologic and behavioral data, enabling healthcare providers to deliver personalized medicine tailored to individual data profiles. These emerging digital health biomarkers—such as smartphone usage data, biometric data surrounding health events, geolocation and ambient environment conditions—present new opportunities for social scientists, engineers and clinicians to enhance health interventions before disease exacerbations occur.

Moreover, digital biomarkers and personal technologies are gaining acceptance as health management tools and increasingly integrated in clinical decision making. On a broader scale, technologies that utilize public health infrastructure such as wastewater-based epidemiology and crowdsourced street maps are providing unprecedented insights into the impact of disease on communities.

The goal of this minitrack is to provide an opportunity for multidisciplinary collaboration and exploration of the various facets of health technologies and their ability to inform clinical decision making and offer personalized medicine. Last year's minitrack explored these themes through four featured papers. These papers discussed topics including wearable devices to evaluate the accuracy of heart rate monitoring during indoor and outdoor cycling, the feasibility and acceptability of digital phenotyping for personalized HIV prevention among marginalized population, a novel encoder-decoder-based deep learning model that can be used to predict future walking joint kinematics, and the operational challenges across two studies utilizing a digital pill system to measure pre-exposure prophylaxis for HIV in men who have sex with men.

This year's minitrack features three papers that explore the use of body sensor networks for personalized medicine.

In the first paper, the authors present proof-of-concept of a virtual reality platform to deliver a behavioral medication adherence intervention to provide support for marginalized populations with chronic high-risk health conditions. The second paper details a pilot study that utilizes data from wearable sensors to recognize infant activities with the goal of utilizing this data to detect motor disorders and promote healthy movement behaviors. The third paper presents user perspectives on the use of a digital pills system and an electronic pill dispenser for adherence support for HIV medications.

We are excited to convene this year at HICSS-58. We are looking forward to generating thoughtful discussions of the featured papers and fostering the development of new ideas for future work.