

Discovery Seminar

Wireless Mobile Health: Applications and Enabling Technologies

Open to first-year and second-year UB undergraduate students

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The ability to continuously monitor physiological signals, activities, and lifestyles of individuals using sensors and wireless technologies has reached unprecedented levels. Wearable "on-body" and implanted "intra-body" sensors may enable continuous monitoring of a host of physiological signals (e.g., heart rate, blood pressure, glucose level, and respiratory rate, among others), physical activities (e.g., calorie expenditure), and activity patterns (e.g., sleep). These measurements can be analyzed on dedicated hubs, or remotely collected at a physician's office. In addition, state-of-the-art smartphones are equipped with multiple sensors for monitoring activities and location, thus potentially enabling inferences about complex human activities (e.g., stress, addiction). Even more intriguing scenarios involve the development of implanted cyber-physical systems, where implanted sensing and actuating devices communicate within the human body. For example, sensors could measure a physiological parameter (e.g., glucose) and implanted actuators (e.g., an insulin pump) could reactively administer the correct dose of insulin.

This discovery seminar will offer to first and second year students an exploration of the main challenges in mobile health including: a) applications of mobile health; b) enabling technologies, including sensors, low-power radio-frequency wireless communications, ultrasonic communication techniques; c) practical considerations including energy-efficiency, wearability, privacy, among others; d) key techniques to perform inference of key health assessments from sensor data (e.g., stress, mood, sleep patterns, eating behavior, mental health).