SPOTLIGHT ON TRANSACTIONS

Can Affective Computing Save Lives? Meet Mobile Health

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More than a decade ago, my Imperial College colleague Robert Istepanian coined the term *mHealth* to represent mobile health sensing and advice. The decade before that, Rosalind Picard's seminal book gave birth to affective computing. Both fields have since skyrocketed. Today, affective computing can enhance mHealth by, for example, encouraging mHealth technology adherence through emotionally intelligent device interactions, such as engagement monitoring. In the broader healthcare field, affective computing can be used to recognize pain in a patient's voice or face, monitor clinical depression, or help individuals with autism recognize and express emotion. And the technical experiences gained from mHealth can be applied to mobile affective computing, which is slowly but surely entering consumers' everyday lives.

In "Real-Time Tele-Monitoring of Patients with Chronic Heart-Failure Using a Smartphone: Lessons Learned" (*IEEE Trans. Affective Computing*, vol. 7, no. 3, 2016, pp. 206–219), Daniel Aranki, Gregorij Kurillo, Posu Yan, David M. Liebovitz, and Ruzena Bajcsy present a smartphone-based system for monitoring patients with chronic heart failure. The system uses real-time passive remote monitoring to measure physical outdoor activity and walking distance via minute-by-minute GPS tracking, and estimates energy expenditure via accelerometry. The authors' pilot study of 15 participants sought to establish the system's real-world feasibility. They developed a secure-transmission distributed approach, which allowed medical staff to intervene at any suspicion of urgency; they also passively monitored the subjects by measuring vital signs and general cardiovascular symptoms, and actively monitored through daily surveys. In their article, Aranki and his colleagues touch on the requirements, acceptability, usability, and usage fatigue implications. They rightfully state that these and the "challenges, privacy considerations, and lessons learned" apply to other chronic health conditions that could benefit from continuous mHealth technologies. Most certainly, this also holds for a broad range of affective states.

Given future cross-field fertilization, mobile affective computing could one day save lives by reliably recognizing severe depression or pain in real time via remote monitoring. Or it could contribute to mHealth apps' automated user behavior and objectiveness analyses of sensitive self-reported data, reducing manual medical staff efforts.

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