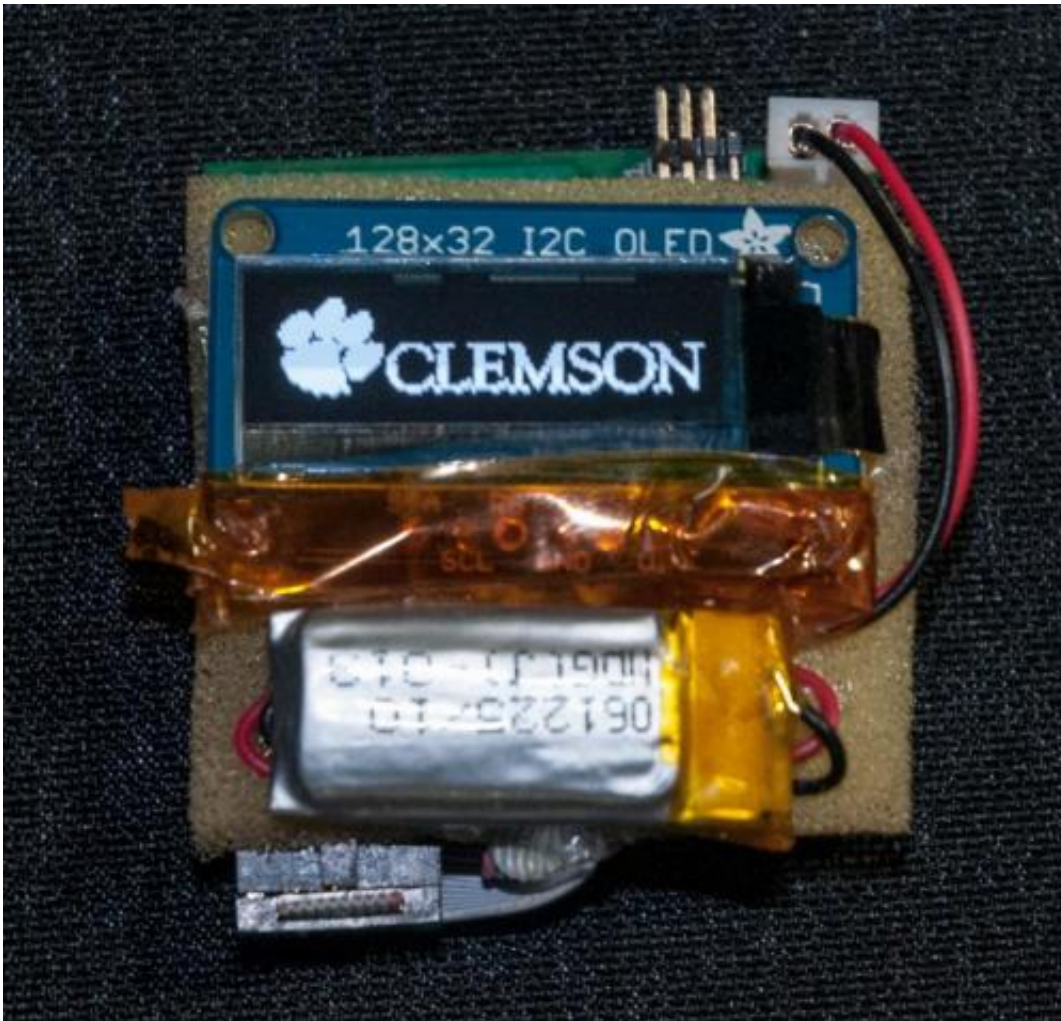# Researchers unveil wearable computational jewelry to monitor health

April 29 2014

Amulet includes a software framework that enables developers to create user-friendly, safe, secure and efficient mobile-health applications that fit seamlessly into everyday life. Credit: David Kotz, Dartmouth College

Researchers from Clemson University and Dartmouth College revealed their computational jewelry to support mobile health applications at the third USA Science & Engineering Festival in Washington, D.C.

The interdisciplinary team of investigators designed and developed Amulet, an electronic bracelet and a software framework that enables developers to create user-friendly, safe, secure and efficient mobile health applications that fit seamlessly into everyday life.

"The advent of mobile health technology brings great opportunity to improve quality of life, individual and public health and reduce health-care costs," said Kelly Caine, who leads human factors development for Amulet and is an assistant professor in the Human-Centered Computing Division at Clemson. "Although mobile health devices and applications are proliferating, many challenges remain to provide the necessary usability, manageability, interoperability, availability, security and privacy."

The researchers are engineering tools and laying the scientific foundation for secure, privacy-preserving wearable mobile health. In the process, they are developing a general framework for body-area pervasive computing, centered on health-monitoring and health-management applications.

A wristband that securely manages one's health and wellness devices, including those that can measure physical activity and monitor overall body health. Credit: David Kotz, Dartmouth College

"Our vision is that computational jewelry, like Amulet, provides the properties essential for successful body-area mobile health networks," said Jacob Sorber, a developer of Amulet and assistant professor in the Computer Science Division at Clemson. "This devices coordinates the activity of the body-area network and provides a discreet means for communicating with their wearer."

Amulet Computational Jewelry for Healthcare, a wristband that securely manages one's health and wellness devices, including those that can measure physical activity and monitor overall body health. (Dartmouth College Institute for Security Technology Studies and Clemson University, School of Computing).

Amulet includes a software framework that enables developers to create user-friendly, safe, secure and efficient mobile-health applications that fit seamlessly into everyday life.

This device complements the capabilities of a smartphone, bridging the gap between the type of universal computing possible with a mobile phone and enabled by a wearable computing device.

The research is determining the degree to which computational jewelry offers advantages in availability, reliability, security, privacy and usability, and developing techniques that provide these properties in spite of the severely constrained power resources of wearable jewelry.

"Unlike popular fitness trackers, this wristband talks to your other health and fitness devices, so they know it's you using them and gives you a quick and easy way to approve the transfer of health information from one device to another or to your health record at your direction, therefore preserving privacy," Sorber said.

Amulet tracks the use of medications and sends reminders when it's time for another dose. The wristband also will provide critical health data to responders if the wearer experiences a medical emergency.

Provided by Clemson University