Tomo: Wearable, Low-Cost Electrical Impedance Tomography for Non-Invasive Gesture Recognition

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Technology description

The system described herein provides a small, low- powered and low-cost ElT sensor that could be integrated into wearable devices, such as but not limited to smartwatches. This ability to non-invasively look inside a user's body presents interesting application possibilities. For example, muscles change their cross-sectional shape and impedance distribution when flexed. Therefore, in one example embodiment, the EIT sensor was used for gesture recognition. This example system, designed as a sensing armband that can be worn on the wrist or arm was evaluated in a user study with vaying gesture sets. Results showed that the wrist location achieved 97% and 87% accuracies on these gesture sets respectively, while the arm location achieved 93% and 81%. The present invention was also implemented into a smartwatch to demonstrate the utility of this approach, allowing for hand gestures and direct touch manipulation to work synergistically to support interactive tasks on small screens.

Institution

Carnegie Mellon University

Inventors

Christopher Harrison

联系我们

叶先生

电话：021-65679356
手机：13414935137
邮箱：yeyingsheng@zf-ym.com