IEEE1451.4 multi-sensing platform for wheelchair users assessment

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Abstract:
The article presents a prototype of a distributed system for wheelchair users assessment characterized by multi-sensing, embedded processing compatible IEEE 1451.4 standard for smart sensors and wireless communication based on IEEE 802.15.4. A set of smart sensing channels are connected in a 1-Wire network supported by an embedded platform that assures the acquisition and appropriate digital processing of photoplethysmogram (PPG), ballistocardigram (BCG) and skin conductivity signals. The wheelchair user identification is performed using LF RFID technology and the information is uploaded in a Electronic Health Record framework. The designed and implemented distributed measurement system was tested and experimental results are included in the paper.

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