2 CRNTC+: A smartphone-based sensor processing framework for prototyping personal healthcare applications

While smartphone apps for health monitoring and patient support are of great interest to care providers and patients alike, suitable development and evaluation frameworks are currently lacking. We present and evaluate an Android open-source smartphone framework CRNTC+ for sensors data acquisition, signal processing, pattern analysis, interaction and feedback, based on the Context Recognition Network Toolbox (CRNT). CRNTC+ extends the original CRNT by providing components to read smartphone and external sensor data, supporting annotations, and various output components. Here, we formally evaluate CRNTC+ regarding extensibility, scalability, and energy consumption. We present study results where CRNTC+ was deployed in an application to detect epileptic seizures. Results showed that CRNTC+ is well-suited for prototyping health applications in real-life, where online sensor data recording and recognition is needed.

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