**Cover letter**

Dear Editor and Reviewers,

Attached you will find the manuscript titled “A Wi-Fi IoT prototype for ECG monitoring exploiting a novel Compressed Sensing method”. This paper is an extended version of the paper, E. Balestrieri, P. Daponte, L. De Vito, F. Picariello, S. Rapuano, I. Tudosa, “Experimental assessment of a novel CS-based acquisition method for ECG signal in IoMT”, presented at the 2019 23rd IMEKO TC4 International Symposium Electrical & Electronic Measurements Promote Industry 4.0, September 17-20, 2019, Xi’an, China.

This paper presents an Internet of Things (IoT) prototype which consists of a data acquisition device wirelessly connected to Internet via Wi-Fi, for continuous electrocardiogram (ECG) monitoring. The proposed system performs a novel Compressed Sensing (CS) based method on ECG signal with the aim of reducing the amount of transmitted data, thus realizing an efficient way to increase the battery life of such devices.

The experimental results demonstrate the advantage of using the CS method for reducing the energy consumption of the entire prototype keeping an acceptable reconstruction quality of the ECG signal, for compression ratios of 4 and 8.

In the following, the changes and the technical extensions of this manuscript respect to the Symposium paper are stated:

* The title was changed: “A Wi-Fi IoT prototype for ECG monitoring exploiting a novel Compressed Sensing method”, in order to empathize that an IoT prototype implementing the proposed CS method based on Wi-Fi connectivity was developed.
* The “Introduction” Section was completely re-written by highlighting the energy consumption advantages of using the Compressed Sensing algorithm on battery-powered devices.
* The “Description of the CS-based method” Section was divided in two parts: the first one referred to the compression and the second part focused on the reconstruction steps.
* The “Implemented IoT system prototype” Section was completely re-written since the implemented prototype is based on a microcontroller with Wi-Fi capabilities (CC3200), instead of the previous adopted microcontroller having a BLE interface (CYW920719Q40EVB-01). The firmware of the microcontroller was changed for allowing the connection of the device to the router. Furthermore, a LabVIEW application was developed for receiving the compressed data and for performing the signal reconstruction in real-time.
* In the Symposium paper, the energy consumption of the implemented prototype was not evaluated. On the other hand, in this manuscript, the results for the evaluation of the energy consumption of the microcontroller are reported. In particular, a power measurement system was implemented, and its metrological characterization is described.
* A comparison between the results obtained at several compression ratios in terms of energy consumption and Percentage of Root-mean-squared Difference (PRD) is reported.
* In this manuscript, all the figures have been updated according to the above-mentioned changes. Furthermore, two tables have been added.
* The References have been updated.

We thank you in advance for your precious work.

Best Regards,

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