

Portable Cardiac Monitoring System Based on Real-Time Microcontroller and Multiple Communication Interfaces

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Abstract : This paper presents the contributions in designing a mobile system named Tele-ECG implemented for remote monitoring of cardiac patients. For a better flexibility of this application, the authors chose to implement a local memory and multiple communication interfaces. The project described in this presentation is based on the ARM Cortex M0+ microcontroller and the ADAS1000 dedicated chip necessary for the collection and transmission of Electrocardiogram signals (ECG) from the patient to the microcontroller, without altering the performances and the stability of the system. The novelty brought by this paper is the implementation of a remote monitoring system for cardiac patients, having a real-time behavior and multiple interfaces. The microcontroller is responsible for processing digital signals corresponding to ECG and also for the implementation of communication interface with the main server, using GSM/Bluetooth SIMCOM SIM800C module. This paper translates all the characteristics of the Tele-ECG project representing a feasible implementation in the biomedical field. **Acknowledgment:** This paper was supported by the project 'Development and integration of a mobile tele-electrocardiograph in the GreenCARDIO© system for patients monitoring and diagnosis - m-GreenCARDIO', Contract no. BG58/30.09.2016, PNCDI III, Bridge Grant 2016, using the infrastructure from the project 'Integrated Center for research, development and innovation in Advanced Materials, Nanotechnologies, and Distributed Systems for fabrication and control', Contract No. 671/09.04.2015, Sectoral Operational Program for Increase of the Economic Competitiveness co-funded from the European Regional Development Fund.

Keywords : Tele-ECG, real-time cardiac monitoring, electrocardiogram, microcontroller

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