

Basic Developing Environment of Microcontroller-based Monitoring System for Physiological Signals

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Abstract— In this study, an apparatus for basic physiological signal acquisitions sent to Cloud for monitoring and computation has been designed and implemented. The basic physiologic signals included user's temperature, breath rate, and heart rate. The Bluetooth communication technology was employed to connect between the microcontroller module and notebook computer or smart phone. The recurrent neural network was employed to precisely detect the respiration rates. Through the measuring of thermistor, the accuracy is over 90% for breath rate. The range of temperature error was 0.5°C. The previous output of the neuron network feedback and weighting averaged with new input. The method is precise. However, the complex neuron network should be discussed in the future work for improving the accuracy of the system. The uncertain of computations was affected by the selections of computing durations. Because the raw data has been converted to values of heart and breath rates, the communication volume between client and cloud can be much reduced, as well as this technology can be employed for the other physiological signals to elevate the performance of this system in the near future.

Keyword— neural network, signal, cloud



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