



CONSERVING BANDWIDTH IN A WIRELESS SENSOR NETWORK FOR TELEMEDICINE APPLICATION

SHUO-JEN HSU^{1,*}, CHIN-HSING CHEN^{2,*}, SHOW-HONG CHEN¹, WEN-TZENG
HUANG³, YUAN-JEN CHANG², AND YOU-YIN CHEN^{1,†}

¹*Department of Electrical and Control Engineering
National Chiao-Tung University*

[†]*irradiance@so-net.net.tw*

²*Department of Management Information Systems
Central Taiwan University of Science and Technology*

³*Department of Computer Science and Information Engineering
Minghsin University of Science and Technology*

ABSTRACT—Telemedicine aided by wireless sensor networks (WSN) has recently become a healthcare trend. Many previous studies have adopted the ZigBee-based WSN to implement a platform and/or a telemedicine system. However, the low data rate and bandwidth have limited the maximum number of nodes in a WSN during continuous and simultaneous transmission. The issue of low data throughput has not been addressed in previous research. In this study, we propose an arrhythmia-aware system, and a new DSP-based WSN platform is developed for the high compression performance of physiological data in a ZigBee-based WSN. Proven by simulations and several real tests, the combination of the proposed platform and the sensor nodes can lead to more bandwidth conservation and extend the WSN scale for the next generation of telemedicine system.