

REMOTE MEDICAL CARE SYSTEM DESIGN BASED ON RFID AND ZIGBEE TECHNOLOGY VIA WIRELESS SENSORS NETWORK

WEN-TSAI SUNG*, JUI-HO CHEN, MENG-HUI WANG AND YAO-CHI HSU

Department of Electrical Engineering
National Chin-Yi University of Technology
No. 35, Lane 215, Section 1, Chung-Shan Road, Taiping City, Taichung County 411, Taiwan
*Corresponding author: songchen@ncut.edu.tw

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ABSTRACT. *RFID and ZigBee technologies are used to establish a remote medical care system with a network server developed to collect and analyze IDs, the physiological sensed signals from the persons in care. The collected data transmitted to a medical-care center monitoring system through ZigBee wireless devices. The proposed system serves as a remote medical care and security monitoring system. Multiple physiological sensor chips are embedded using a wireless network with RFID and ZigBee technologies. FPGA-based portable embedded physiological sensor bears flexibility because of the prevailing technology. Moreover, a short-range wireless standard protocol, ZigBee provides reliable low cost, low power consumption, and bidirectional transmission capabilities. Over past years, integrated chip design based RFID and digital wireless ZigBee protocol, ZigBee has gained great market attention for monitoring, control and automation applications.*

Keywords: RFID, ZigBee, Remote medical care system, Embedded system, Wireless sensor network

1. Introduction. Great progress in semiconductor embedded system performance has enabled the incessant development of high speed, density Programmable Logic Devices (PLD), which affords advantages such as compactness, low price, powerful functions, real time calculation, data storage and programmability, gradually giving chip design applications huge attention. In the single chip SOPC trend, the IC-design company integrates many IP heightening chip value and functions into single chip, which in turn continuously prompts the development of SOPC research and products from a variety of research institutions, schools and industry sectors. We investigate Wireless Sensor Network (WSN) applications for nursing, aimed at bringing convenience to patients and medical staff. Wireless medical care system research has been in the limelight over the past several years, with minimization of biomedical sensors and fast progress in data processing and wireless technology. A new set of network medical-care devices and systems are proposed, utilizing high frequency wireless multi-channel inter-transmission between the biomedical sensors and monitoring instrument – decreasing the wiring between them and bringing more free living space to the patients. The proposed system provides more accurate measurement indices combined with avoiding the hardship of moving between the home and hospital.

We begin with some discussion on the issues and challenges in remote medical care systems. We integrated RFID and ZigBee technologies to improve the care system. This study employed FPGA-based portable embedded physiological sensors with wireless technologies to establish a complete remote medical care system. Examples and experimental results are presented to prove that this study is better than existing approaches.