Generic Design and Advances in Wearable Sensor Technology

Siddig Gomha and Khalid M. Ibrahim

Abstract Rapid development in telecommunication, microelectronics, sensors, and material science creates new opportunities for the interaction between human body and wearable sensors. The wearable devices fixed on the human body can sense, analyze, and transmit data through a wireless to a terminal device for more processing; these collected data will provide a health care of human being. Wearable sensor technology has many applications in medical and health care, monitoring elderly and chronically sick persons, monitoring player in such sports, education and teaching assistance, tracking and monitoring human/animals, and security. However, to design and implementing wearable devices, a lot of obstacles will have to be overcome to inexpensively develop the active electrical devices on elastic substrate taking advantage of macroscale fabrication techniques. The wearable devices system is consist of sensors (e.g., temperature and pressure sensors, gyroscope), low-power embedded system, and wireless transceiver system (e.g., Wi-Fi, Bluetooth, ZigBee); all these devices are integrated into one system to transmit and receive data. This chapter will shade the light for these obstacles toward realizing a robust and reliable integrated wearable system.

Keywords Wearable sensors · Body area network · Healthcare monitoring
Power harvesting for wearable devices system · Smart glass · Augmented reality

S. Gomha (✉)
Pan African University Institute for Basic Science Technology and Innovation (PAUSTI), Nairobi, Kenya
e-mail: siddig.gomha@gmail.com

S. Gomha · K. M. Ibrahim
Faculty of Engineering, University of Medical Sciences and Technology (UMST), Khartoum, Sudan
e-mail: khmoibrahim@gmail.com

K. V. Arya et al. (eds.), *Emerging Wireless Communication and Network Technologies*,
https://doi.org/10.1007/978-981-13-0396-8_9