Privacy and Secure Medical Data Transmission and Analysis for Wireless Sensing Healthcare System

ABSTRACT:

The convergence of Internet of Things (IOT), cloud computing and wireless body-area networks (WBANs) has greatly promoted the industrialization of e-/m-healthcare (electronic-/mobile-healthcare). However, the further flourishing of e-/m-Healthcare still faces many challenges including information security and privacy preservation. To address these problems, a healthcare system (HES) framework is designed that collects medical data from WBANs, transmits them through an extensive wireless sensor network infrastructure and finally publishes them into wireless personal area networks (WPANs) via a gateway. Furthermore, HES involves the GSRM (Groups of Send-Receive Model) scheme to realize key distribution and secure data transmission, the HEBM (Homomorphic Encryption Based on Matrix) scheme to ensure privacy and an expert system able to analyze the scrambled medical data and feedback the results automatically.

<u>INTRODUCTION:</u>

The rapid technological convergence of Internet of Things (IoT), wireless body-area networks (WBANs) and cloud computing has caused e-healthcare (electronic-healthcare) to emerge as a promising information-intensive industrial application domain that has significant potential to improve the quality of medical care and collecting data collection, transmission, processing and presentation has become a critical issue in e-healthcare applications, in which a variety of wireless sensor nodes and terminal devices play important roles in network data aggregation and communications. The evolution of m-health (mobile-health) technology has made it possible for people to gather information concerning their health status easily, anytime and anywhere using smart mobile devices. These medical data consist of personal private information that should not be susceptible to eavesdropping or malicious tampering during transmission. Therefore, the privacy protection and secure transmission of e-/m-healthcare (electronic-/mobile-healthcare) data has drawn more attention from many researchers. A secure and reliable e-/m-healthcare framework to defend against hostile attacks and threats is highlighted for available applications of the informational healthcare industry. To effectively process the ever-growing volume of healthcare data and protect data privacy but maintain low sensor network overhead.