

IoT enabled elderly monitoring system and the role of privacy preservation frameworks in e-health applications

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Abstract. Healthcare IoT (HIOT) or Electronic health (e-health) is an emerging paradigm of IoT in which multiple bio sensors are capturing body vitals and disseminating captured information to the nearest data center through the underlying wireless infrastructure. Despite the observation of such rapid research and development trends in e-health field with its key facets (i.e Sensing, communication, data consolidation and delivery of information) and its inherent benefits (e.g., error reduction, homecare and better patient management), it is still facing several challenges. These challenges are ranging from development of an interoperable e-health framework to design of an attack free security model for both data and device. In this article, an overview of recent technological trends in designing HIOT privacy preservation framework is provided and the corresponding security challenges are discussed subsequently. Alongside, we also propose an architectural framework for monitoring health vitals of differently abled or a patient with degenerative chronic disorder. The interaction of application components is illustrated through the help of different use-case scenarios.

Keywords: Healthcare IoT (HIoT), Interoperability, e-health, Access control, Authentication.

1 Introduction

IoT has gained a massive ground in day-to-day's life of the researchers and practitioners due to its capability of offering an advanced connectivity and uniquely identifying nature of every physical instance on the planet earth. Thanks to IPV4 and IPV6 addressing spaces which facilitates the seamless addressing schemes that can be remotely being called. These technological evolutions offer the new ways for smart objects to communicate with things (M2T), machines (M2M), and humans (M2H) [1]. With the rapid increment in the requirements of remote monitoring, the IoT enabled healthcare devices can be commonly seen in many domestic places nowadays. These devices help in monitoring body vitals majorly temperature, heartrate, blood pressure and glucose level etc. Thus by enabling patients with self-