


Chapter 2

Leveraging IoT for Patient Monitoring and Smart Healthcare: Connected Healthcare System

Bhupinder Singh

 <https://orcid.org/0009-0006-4779-2553>

Sharda University, India

Christian Kaunert

 <https://orcid.org/0000-0002-4493-2235>

Dublin City University, Ireland & University of South Wales, UK

ABSTRACT

A new era of “smart health” has begun as a result of advances in advanced technology, revolutionizing patient and medical staff healthcare procedures both inside and outside of hospitals. Patients can now gather thorough health data utilizing cellphones and wearable technology, independent of their geographic location or time zone. However, present tactics for smart-health devices tend to focus on the smartness of the technology itself and on controlling a specific disease or condition. The use of this patient-generated data holds great promise for future healthcare breakthroughs in many ways. It entails the integration of advanced machine learning methods to track and analyze human activity, thereby fostering a holistic approach to personalized healthcare. This chapter focuses on the multifarious aspects of Leveraging IoT for Patient Monitoring and Smart Healthcare.

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1. INTRODUCTION

These connected network of sensors, wearables and smart appliances collectively record the complete human spectrum movements (Sardar et al., 2024) The ability of machine learning algorithms to deal with big data and individually understand complex patterns related immense amounts of text. Right now, only healthcare systems have opportunities to take advantage of these advancements with the current model (Khurana 2024). This forward-thinking concept imagines a frictionless world where the daily activities of individuals are digitally surveyed and evaluated through advanced technological means to offer actionable insights that promote their overall well-being. This real-time data enables detection of anomalies, deviations or early indications to health threats and where appropriate interventions should be taken in time for prevention (Li et al., 2021). Markedly human activity tracking by machine learning techniques stands to be a game-changer in the health care field (Sejdic & Falk, 2018). By continuously keeping track of vital signs, movement patterns and even the smallest changes in behavior over time, healthcare practitioners can develop a deep understanding of an individual's health-state (Luo et al 2016).

This ultimately works toward allowing people to be in charge of monitoring their own health as they are given prescribed activity recommendations, knowledge based on the high-street data input (Mohammadi et al., 2018). Creating an Enchanted Life Space stirs mess ups inherent in the realization. The protection of data privacy and security may be the most essential part in maintaining confidentiality for private health information (Scarpato et al., 2017). In addition the accuracy and reliability of machine learning algorithms have to increase substantially in order to avoid false alarms or critical events that go unnoticed (Dash et al. 2019). Introduction of machine learning in integration with human activity tracking, which established a new paradigm for healthcare informatics: Enchanted Life Space (Singh, 2024). The seamlessly intertwining technology and well-being, this visionary concept promises to empower individuals, optimize healthcare delivery, and ultimately contribute to a healthier and more enriched quality of life (Singh et al., 2024).

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