VLC Technology in Remote Patient Monitoring Systems: A Survey

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Abstract— In the era of connected healthcare, visible light communication (VLC) stands out as a revolutionary technological advancement in the field of remote patient monitoring systems (RPMS). By using LED light to transmit data, VLC offers a solution that is not only fast and efficient, but also secure, eliminating potential interferences related to traditional radio technologies. This innovation enables continuous monitoring of patient health parameters while ensuring reliable data transmission in healthcare environments. This paper aims to provide a comprehensive literature review regarding the use of visible light communication (VLC) in remote patient monitoring systems (RPMS). Therefore, a typical architecture of VLC-based RPMS systems is described. We also explored the different configurations of VLC transceivers, categorized into three categories: static, mobile, and hybrid. Furthermore, we reviewed the main applications of VLC in RPMS, highlighting its potential to improve the quality of care and continuous patient monitoring. Finally, an in-depth analysis of the existing literature, identifying technical challenges and emerging solutions laying the foundations for future work aimed at integrating Deep Learning techniques to optimize these systems.

Keyword— Visible Light Communication (VLC), Remote Patient Monitoring Systems (RPMS), eHealth

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