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Bedroom Monitoring System for Isolated Elderly People and Patients

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Abstract

With the rapid growth of a number of elderly people around the world, an increasing need has arisen in providing physical security to them. Researchers have been working in developing such monitoring systems for the past decades. However, the needs of elderly people and their families are yet to be fulfilled, especially since the developed existing systems need their users to change their lifestyles. This work aims at suggesting a system for monitoring the occupancy of an elderly person on the bed. Capacitive proximity sensing system has been proven to be a probable solution for indoor localization, which senses the presence of a human body. Nevertheless, the requirements for installation are many, which make the integration costly. In this paper, a flexible and integrated solution is proposed that makes use of inexpensive, open source hardware, allowing indoor localization and fall detection. The bed monitoring system is made up of aluminum sheets sensor electrodes installed under the bed sheets to detect the sleeping patterns of the subject. An alarm system has been integrated into the room to enable the elderly to call for help during an emergency. Presence detector and light controlling device are installed on the floor surface to detect the mobility of the elderly and turn ON/OFF the room lights automatically. The proposed system allows elderly people to live independent living at homes with all amenities.

Keywords

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