

Analysis of an indoor biomedical radar-based system for health monitoring

Abstract

Innovative technology approaches have been increasingly investigated for the last two decades aiming at human-being long-term monitoring. However, current solutions suffer from critical limitations. In this paper, a complete system for contactless health-monitoring in home environment is presented. For the first time, radar, wireless communications, and data processing techniques are combined, enabling contactless fall detection and tagless localization. Practical limitations are considered and properly dealt with. Experimental tests, conducted with human volunteers in a realistic room setting, demonstrate an adequate detection of the target's absolute distance and a success rate of 94.3% in distinguishing fall events from normal movements. The volunteers were free to move about the whole room with no constraints in their movements.

Keywords

Fall detection; Health monitoring; Radar remote sensing; Tagless localization; Zigbee communication