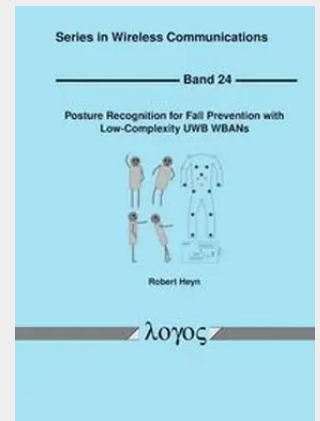


Posture Recognition for Fall Prevention with Low-Complexity UWB WBANs

In our increasingly interconnected world, personalized and technology-assisted healthcare has become a rising trend. In an ageing society, technology enables new ways to care for and assist the elderly. Falls pose a major risk and cause of injuries for senior citizens. Technology-backed fall prevention thus has the potential to avoid severe injuries and further loss of independence, but requires continuous monitoring of the body posture in order to identify imminent falls. This work presents a system concept for a wearable wireless body area network (WBAN) for posture monitoring. It shows the principal feasibility of posture recognition from ultra-wideband (UWB) signals based on a large and diverse set of measurements. For a promising classifier-feature-combination, this work demonstrates how reliable posture recognition can be achieved with a limited number of body-mounted nodes, and analyzes its robustness towards potential pitfalls. It concludes with a proposal for a system implementation, and outlines its integration with existing and future aspects of personalized healthcare.

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