FALL DETECTION AND PREVENTION FOR THE ELDERLY: A REVIEW OF TRENDS AND CHALLENGES

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Abstract- It is of little surprise that falling is often accepted as a natural part of the aging process. In fact, it is the impact rather than the occurrence of falls in the elderly, which is of most concern. Aging people are typically frailer, more unsteady, and have slower reactions, thus are more likely to fall and be injured than younger individuals. Typically, research and industry presented various practical solutions for assisting the elderly and their caregivers against falls via detecting falls and triggering notification alarms calling for help as soon as falls occur in order to diminish fall consequences. Furthermore, fall likelihood prediction systems have been emerged lately based on the manipulation of the medical and behavioral history of elderly patients in order to predict the possibility of falls occurrence. Accordingly, response from caregivers may be triggered prior to most fall occurrences and accordingly prevent falls from taking place. This paper presents an extensive review for the state-of-the-art trends and technologies of fall detection and prevention systems assisting the elderly people and

their caregivers. Furthermore, this paper discusses the main challenges, facing elderly fall prevention, along with suggestions for future research directions.

Index terms*:* **Fall detection, fall prevention, elderly monitoring, motion sensing**