**A novel vision-based fall detection scheme using key points of human-skeleton**

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**Abstract:** Human activity recognition plays a prominent role in applications like sports, violence detection, accident detection, women security, and smart homes by predicting abnormal behaviour. Human activity recognition now offers a solution for fall detection which can help older people at home. Falls are recognized as daily events which may lead to critical situations. Fatal falls when left untreated within a confined time may lead to permanent disability. A fall detection system helps in responding to falls promptly. Fall detection systems are developed using multivariate time series data. The main data sources are sensors that are embedded in wearable devices and videos from surveillance cameras. Wearable devices are not always feasible as they may cause inconvenience to the user and also need frequent manual calibration. Hence, the workaround is to use vision-based data for the fall detection system. Our paper presents a new promising solution for fall detection using vision-based approaches. The system extracts the skeleton information of the human body. By analyzing the extracted features and the biomechanics of a person during the fall, we can detect not only falls but also daily living activities. Our system detects five types of falls and six types of daily living activities. We used the UP-FALL public dataset for our fall detection system and achieved a better performance than the state-of-the-art approaches.

**Keywords:** activity detection; video analysis; fall detection;