Evaluation of a Fall Alerting System based on a Convolutional Deep Neural Network

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Abstract— Owing to the effects of falls on quality of life of the elderly, automatic fall detection systems (FDS) have become a key research topic in the ambit of telecare. This works assesses the performance of convolutional neural networks when they are applied to identify fall accidents in a wearable FDS provided with a tri-axial accelerometer. The evaluation of the detection algorithm is carried out by employing a benchmarking repository with a wide set of traces captured from a wide group of volunteers that executed a programmed series of Activities of the Daily Living (ADLs) and emulated falls. Results show that the CNN can properly distinguish both types of movements with a success rate (specificity and sensitivity) around 99%.

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