

ABSTRACT

Fall Detection is a technology that can detect falls in a person, especially in the elderly or people at high risk of accidents using wearable devices. This technology uses an accelerometer sensor to distinguish between falls and normal activities in daily life. In this approach, Deep Neural Network machine learning is used to analyze data from the accelerometer. However, having computational limitations on the device becomes a challenge when implementing a Deep Neural Network model. To overcome these limitations, the Low-rank factorization method is used to reduce the size and complexity of the model without sacrificing performance, covering various types of movements such as sitting, running, and falling. The results of this study show that Low-rank Factorization is able to provide significant model efficiency where this model can maintain a high level of accuracy and constraints and also this model offers a power-efficient solution for fall detection on wearable devices

Keywords: Fall Detection, Low-rank Factorization, Accelerometer, Wearable devices, Model efficiency, Deep Neural Network, Power saving solutions