

Abstract: Detecting a Fall Incident using Its Indicators in Smartphone

Ali Fahmi P. N.[†], Vo Viet[†], Choi Deok-Jai^{*}

[†]*School of Electronics and Computer Engineering*

Chonnam National University (CNU), Gwangju, South Korea

[†]{ali.fahmi.pn, vietquangvo}@gmail.com, ^{*}dchoi@jnu.ac.kr

Abstract

Fall is a critical problem especially among elderly. Moreover, it is estimated that future population is dominated by aged people. Rectifying this urgency, there has been initiatives on researches to support aged population living independently. One of the ideas is to enhance mobile phone. Mobile phone offers unobtrusive usage as well as mobility to be everywhere thus promising to be personal healthcare pervasively. Enabling an intelligent mobile phone famously called smartphone for supporting aged population will result great effect on ambient assisted living especially healthcare like in fall detection. Here we present a preliminary study about fall characteristics and its natural mechanism. The study uses two most common sensors found embedded in smartphone. Accelerometer and orientation sensor are sensors we used during simulation. In this paper we study fall from its initial position up to typical end result of fall. Generic fall will present several indicators representing phases of falling process. The indicators would be our key features developing algorithm for smartphone. The indicators will yield various thresholds useful to evaluate genuinely a fall within our algorithm to detect a genuine fall. We present the result of applying algorithm to detect fall using smartphone. The result shows promising accuracy to justify our ideas.