

A wearable fall-detection system based on Body Area Networks for smart cities

Luigi La Blunda^a, Lorena Gutiérrez-Madroñal^b, Matthias F. Wagner^a, I. Medina-Bulo^b

^aWSN and IOT Research Group Frankfurt University of Applied Sciences, Nibelungenplatz 1, 60318 Frankfurt am Main, Germany

^bUCASE Software Engineering Research group, University of Cadiz

Abstract

Falls can have serious consequences for people, which can lead, for example, to restrictions in mobility or in the worst case to traumatic based cases of death. To provide rapid assistance, a portable fall detection system has been developed which is capable of detecting fall situations and, if necessary, alerting the emergency services without any user interaction. The prototype was designed to facilitate a reliable detection and classification of several fall-types. This solution represents a life-saving service for every inhabitant and would significantly enrich the use of smart cities or smart factories where fall-events are part of daily-life. This paper will also introduce the fall analysis, which includes the generation of test events. To guarantee functional safety the hazard analysis method STAMP (System-Theroetic Accident Model and Processes) will be applied.

Keywords: e-Health, fall-detection, Body Area Network, safety, Bluetooth Low Energy, STAMP, smart city

Email addresses: l.lablunda@fb2.fra-uas.de (corresponding author) (Luigi La Blunda), lorena.gutierrez@uca.es (Lorena Gutiérrez-Madroñal), mfwagner@fb2.fra-uas.de (Matthias F. Wagner), inmaculada.medina@uca.es (I. Medina-Bulo)

1. Introduction

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3. Background

4. Fall-detection system prototype

4.1. Architecture

30 4.2. Sensor fusion

ECG

4.3. Generation of test-events

Lorena's part

4.4. Detected problems

35 5. Example application of STAMP as hazard analysis method

5.1. Introducing STAMP

5.2. STAMP - Hazard analysis

6. Conclusion & Future work

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Here are two sample references: [1, 2].

45 References

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