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Alberto Ochoa-Zezzatti
Diego Oliva
Aboul Ella Hassanien *Editors*

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Editors
Alberto Ochoa-Zezzatti
Universidad Autonoma de Ciudad Juarez
Ciudad Juarez, Mexico

Aboul Ella Hassanien
Faculty of Computers and Artificial
Intelligence Information Technology
Department
Cairo University
Giza, Egypt

Diego Oliva
Departamento de Ciencias
Computacionales
Universidad de Guadajalara
Guadajalara, Jalisco, Mexico

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Automatic Fall Detection for the Care of Older Adults in Smart Cities

Sara Judith Ríos Dueñas, Jose Mejia, Alberto Ochoa, Jose Díaz, Lidia Rascon, Nelly Gordillo, and Eddy Sánchez-DelaCruz

Abstract As the number of elderly people increases, it is a necessity for smart cities to take care of elder special needs. As people age, the likelihood of accidents increases because of their motor skills decrease over time, this risk is not only latent when they live alone but also exists within the nursing homes. Because of this, constant care for older adults is a necessity for smart cities, this may not always be possible due to the lack of family members who can care for the elder or in the case of the nursing homes, the staff may not be enough to care for all adults. This leaves the need for systems that can constantly monitor older adults and respond and alert automatically in the event of accidents. In order to find a means to improve the quality of life of older adults who may suffer accidents, in this chapter it is presented an algorithm based on neural networks for the automatic fall detection of older adults in nursing homes. The implemented model was trained and tested on a database of video images containing fall situations.

Keywords CNNs architecture · Fall detection · Smart city

1 Introduction

One of the smart cities aims, is to provide more flexible, efficient, and sustainable services to its citizens. These services include (Mohanti et al. 2016) [24] smart infrastructure, smart transportation, smart energy, and smart healthcare. In this chapter we will focus on this last aspect of smart cities.

As life expectancy has increased the number of elderly people has also increased, this creates a necessity for smart cities to take care of elder special needs [8]. Older people are more prone to suffer accidents or put themselves in risk situations because

S. J. R. Dueñas · J. Mejia (✉) · A. Ochoa · J. Díaz · L. Rascon · N. Gordillo
Universidad Autónoma de Ciudad Juárez, Av. Hermanos Escobar, Ciudad Juárez, Mexico
e-mail: jose.mejia@uacj.mx

E. Sánchez-DelaCruz
Instituto Tecnológico Superior de Misantla, Veracruz, Mexico

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