

Towards the improvement of Healthy Ageing with Humanoid Robots

Miguel Xochicale, *Doctoral Researcher*

Index Terms

Engineering; Robotics; Health Sciences



ABSTRACT

In 2015, it was estimated that 125 million people worldwide were aged 80 years or older. By 2050, it is predicted that 350 million of older people will live in low- and middle-income countries [1]. It is worthwhile to mention that some of the general key environmental factors to have a healthy ageing are long-term care, good relationships with friends, family and care givers. To accomplish the previous factors, the World Health Organization mentions that one of the main challenges to create a Healthy Ageing is the improvement of methodologies for measurement, monitoring and understanding many ageing problems.

I am therefore proposing the use of Humanoid Robots to have a Healthy Ageing and to encourage the elderly to have the proper amount of physical activity. Elderly care using Robots has been well developed, mainly, in Japan. For instance, (a) Ri-Man can see, hear and assess a person's health; (b) Paro therapy bot help people with dementia; (c) Palro humanoid robot can play games and dance, to mention but a few. Similarly, humanoid robots such as Pepper and NAO have been used to understand the emotions of people, to play football or to play games with humans. In the case of health applications, NAO has been used to teach diabetic children about various aspects their condition. Also, NAO has been used for arm rehabilitation therapy for children for which children found the Robot interaction activity as one which is more engaging and increase the motivation of children to perform an adequate rehabilitation therapy.

For this work, I believe that it is required to create sufficient physical activity for the elderly given that insufficient physical activity is the fourth leading global risk for mortality in the world with 5.5% [2].

Therefore, I am proposing the use of Robots to improve the quality of life of elderly persons with regard to the encouragement of performing physical activity. I am planning to present preliminary outcomes of the use of NAO as a instructor for participants using on-body worn sensors to copy movements in scenarios for entertainment and rehabilitation. I will present the advances and disadvantages of using on-body inertial sensors, methodologies for data processing and the measure of the quality of activities within and across participants.

Finally, I will pointed out to the Mexican community that Humanoids Robots can provide recreation services to the elderly by playing games and dancing with them in order to measure, analise, understand and to improve the health of the elderly.

-
- M. Xochicale is with the School of Electronic, Electrical and Systems Engineering, The University of Birmingham, U.K.
E-mail: see <http://mxochicale.github.io/>

REFERENCES

- [1] W. H. Organization. Ageing and health. [Online]. Available: <http://www.who.int/mediacentre/factsheets/fs404/en/>
- [2] ——. Global health risks 2009. [Online]. Available: http://www.who.int/healthinfo/global_burden_disease/GlobalHealthRisks_report_full.pdf