

# Towards the Analysis of Human Movement with Humanoid Robots

Miguel P. Xochicale, Chris Baber and Mourad Oussalah

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## Summary of research [1500 words]

The World Health Organization (WHO) pointed out that people worldwide are living longer. In 2015, 125 million people worldwide were aged 80 years or older and by 2050 there will be almost 434 million people in this age group worldwide, of which 80 % will live in low- and middle-income countries. Similarly, WHO highlighted that the improvement of methodologies for measurement, monitoring and understanding the elderly are a priority area of action. With this in mind, we believe that we can address those areas of opportunity where humanoids robots can be used for elderly care. For instance, (a) RI-MAN humanoid robot has facial recognition and a scent discernor with the ability to carry patients to different surrounding locations; (b) RIBA-II humanoid robot can carry people up to 80 kg; (c) Paro bot helps people with dementia to decrease stress or feelings of loneliness; and (d) Palro humanoid robot can be used in entertainment activities such as dancing or gaming. Recently, humanoid robots like Pepper and NAO have been used to understand human emotions, or to perform therapies for rehabilitation with children or elderly people. In this talk, I will therefore present the methodologies for measurement, monitoring and understanding the Human-Robot Interaction with the use of wearable inertial sensors. I will also present some results of a group of persons interacting with NAO to show the remarkable capabilities of measuring peer-to-peer influence when receiving instructions from the NAO.

Guneyusu et al. 2015 [GAE15].

## References

- [GAE15] Arzu Guneyusu, Bert Arnrich, and Cem Ersoy. Children's rehabilitation with humanoid robots and wearable inertial measurement units. In *Pervasive Computing Technologies for Healthcare (PervasiveHealth)*, 2015 9th International Conference on, pages 249–252. IEEE, 2015.