Are Robots the Future of Elder Care?

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https://github.com/mxochicale/3mt

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If you are lucky enough, you will live to an average of 80 years. But, have you ever wondered what it would be like turning 70, 80 or maybe 90 years old? Now, imagine as we age, we will be gradually losing all of our charming human senses including sight, hearing, taste, smell, and touch. In short, both our cognitive and motor skills will diminish as we age.

Now think about the people who will be with you until the last day of your life. Will they be with you at all and most importantly will they take care of you 24/7?

Societies are aging world-wide. According to the 2017 revision of the world population prospects [2], people age 60 years or over are expected to be more than double by 2050 and to be more than triple by 2100 [3].

Well, you don't have to worry too much in the coming years, because this is where caregiver robots and MY RESEARCH come in.

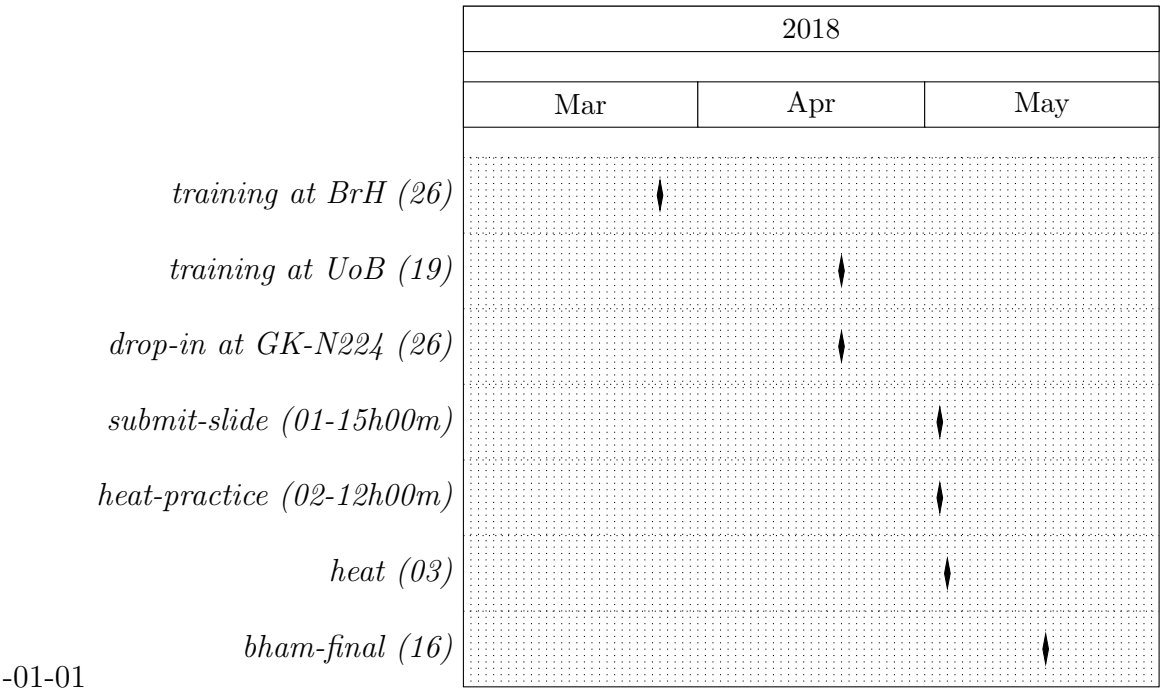
In my PhD, I have created a novel analysis and interpretation of nonlinear time series for movement variability. Particularly, I have studied, understood and implemented algorithms of nonlinear dynamics in order to measure human movement variability. I have also conducted experiments in the context of human robot-interaction where people follow upper arm movements performed by a robot in order to test the algorithms that measure movement variability [6].

Applications of my research are many but let me give you two examples * (First) In the last five years, robots like Palro, a small humanoid robot, can play games and dance with the elder and therefore keep their minds active, and * (Second) Pepper, a personal humanoid robot, has the power to read and respond to human emotions [1]. Both of the previous examples offer no feedback of people's movement when interacting with robots.

So, in the near future, caregiver robots will gradually meet our physical and emotional needs as we age, by encouraging social activities, healthy eating and exercise [5]. That is the future that I am working on. A future where humanoid robots can automatically enhance and monitor physical activities of the elderly.

Perhaps my parents, back in Mexico, are not going to directly benefit from these technological advances but I do believe that future generations of people world-wide will be assisted by caregiver robots, therefore making the elderly more independent, happier and healthier!

Key Dates



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References

[1] Mark Hay, *Why robots are the future of elder care?*, `https://www.good.is/articles/robots-elder-care-pepper-exoskeletons-japan` (24 June 2014)

[2] United Nations, *The 2017 Revision of the World Population Prospects*, `https://esa.un.org/unpd/wpp/Publications/Files/WPP2017_KeyFindings.pdf`

[3] United Nation Blog, *Ageing*, `http://www.un.org/en/sections/issues-depth/ageing` (24 June 2014)

[4] Cynthia Matuszek, *Robot caregivers for the elderly could be 10 years away*, `http://uk.businessinsider.com/robot-caregivers-for-the-elderly-10-years-away-2017-8` (28 August 2017)

[5] Louise Aronson, *The future of robot caregivers*, `https://www.nytimes.com/2014/07/20/opinion/sunday/the-future-of-robot-caregivers.html` (19 July 2014)

[6] Miguel P Xochicale, *Publications*, `https://mxochicale.github.io/publications`