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Situational-Context for Virtually Modeling the Elderly

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Abstract

The generalized aging of the population is incrementing the pressure over, frequently overextended, healthcare systems. This situations is even worse in underdeveloped, sparsely populated regions like Extremadura in Spain or Alentejo in Portugal. In this paper we propose an initial approach to use the Situational-Context, a technique to seamlessly adapt Internet of Things systems to the needs and preferences of their users, for virtually modeling the elderly. These models could be used to enhance the elderly experience when using those kind of systems without raising the need for technical skills. The

proposed virtual models will also be the basis for further eldercare innovations in sparsely populated regions.

Keywords

Situational-context **Internet of Things**

Eldercare **Virtual profiles**

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References

1. Berrocal, J., García-Alonso, J., Canal, C., Murillo, J.M.: Situational-context: a unified view of everything involved at a particular situation. In: Bozzon, A., Cudré-Mauroux, P., Pautasso, C. (eds.) Proceedings of the 16th International Conference on Web Engineering, ICWE 2016. Lecture Notes in Computer Science, vol. 9671, Lugano, Switzerland, 6–9 June 2016, pp. 476–483. Springer, Cham (2016).
https://doi.org/10.1007/978-3-319-38791-8_34
 2. Berrocal, J., García-Alonso, J., Murillo, J.M., Canal, C.: Rich contextual information for monitoring the elderly in an early stage of cognitive impairment. *Pervasive Mob. Comput.* **34**, 106–125 (2017).
<https://doi.org/10.1016/j.pmcj.2016.05.001>
 3. Caceres, R., Friday, A.: Ubicomp systems at 20: progress, opportunities, and challenges. *IEEE Pervasive Comput.* **1**, 14–21 (2011)
-

4. Fonseca, C., Lopes, M., Fonseca, C., Lopes, M.: Modelo de autocuidado para pessoas com 65 e mais anos de idade, necessidade de cuidados de enfermagem. Universidade de Lisboa, p. 195 (2013). <http://hdl.handle.net/10451/12196>

5. Gronli, T.M., Ghinea, G., Younas, M.: Context-aware and automatic configuration of mobile devices in cloud-enabled ubiquitous computing. *Pers. Ubiquit. Comput.* **18**(4), 883–894 (2014)

6. Guillén, J., Miranda, J., Berrocal, J., García-Alonso, J., Murillo, J.M., Canal, C.: People as a service: a mobile-centric model for providing collective sociological profiles. *IEEE Softw.* **31**(2), 48–53 (2014). <https://doi.org/10.1109/MS.2013.140>

7. Hong, J.Y., Suh, E.H., Kim, S.J.: Context-aware systems: a literature review and classification. *Exp. Syst. App.* **36**(4), 8509–8522 (2009)

8. Kobsa, A.: Generic user modeling systems. *User Model. User-adapted Interact.* **11**(1–2), 49–63 (2001)

9. Lin, C.C., Lin, P.Y., Lu, P.K., Hsieh, G.Y., Lee, W.L., Lee, R.G.: A healthcare integration system for disease assessment and safety monitoring

of dementia patients. *IEEE Trans. Inf. Technol. Biomed.* **12**, 579–586 (2008)

10. Lopes, M.J., Escoval, A., Pereira, D.G., Pereira, C.S., Carvalho, C., Fonseca, C.: Evaluation of elderly persons' functionality and care needs. *Rev. Lat. Am. Enferm.* **21**, 52–60 (2013)

11. Marzano, S.: *The New Everyday: Views on Ambient Intelligence*. 010 Publishers, Rotterdam (2003)

12. Mendes, D., Rodrigues, I., Rodriguez-Solano, C., Baeta, C.: Enrichment/population of customized CPR (computer-based patient record) ontology from free-text reports for CSI (computer semantic interoperability). *J. Inf. Technol. Res.* **7**(1), 1–11 (2014)

13. Mendes, D.: *Clinical Practice Knowledge Acquisition and Interrogation using Natural Language*. Ph.D. thesis (2014).
https://www.rdpcc.uevora.pt/bitstream/10174/12553/1/dissertation_Dm_PhDi.pdf

14. Miranda, J., Mäkitalo, N., García-Alonso, J., Berrocal, J., Mikkonen, T., Canal, C., Murillo, J.M.: From the internet of things to the internet of people. *IEEE Internet Comput.* **19**(2), 40–47 (2015).
<https://doi.org/10.1109/MIC.2015.24>

15. Mulvenna, M., Nugent, C., Moelaert, F., Craig, D., Draes, R.M., Bengtsson, J.: Supporting people with dementia using pervasive healthcare technologies. In: Mulvenna, M.D., Nugent, C.D. (eds.) *Supporting People with Dementia Using Pervasive Health Technologies*. *Advanced Information and Knowledge Processing*, pp. 3–14. Springer, London (2010)

16. Rodrigues, R., Huber, M., Lamura, G.: *Facts and Figures on Healthy ageing and long-term care*. European Centre for Social Welfare Policy and Research, Vienna (2012)

17. Vuong, N., Chan, S., Lau, C.: mHealth sensors, techniques, and applications for managing wandering behavior of people with dementia: a review. In: Adibi, S. (ed.) *Mobile Health*. *Springer Series in Bio-/Neuroinformatics*, vol. 5, pp. 11–42. Springer, Cham (2015)

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