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Short bio

Valeria Villani is Assistant Professor at the Department of Sciences and Methods for Engineering of the University of Modena and Reggio Emilia since 2017.

Her research interests focus on the design of human-centred user interfaces for efficient cooperation between the human and industrial machines or robots and biomedical signal processing for robot control and affective human-robot interaction.

She received her B.Sc. and M.Sc. in Biomedical Engineering from the University Campus Bio-Medico of Rome in 2006 and 2009, respectively, and her Ph.D. in Biomedical Engineering from the University Campus Bio-Medico of Rome in 2013, focusing on biomedical signal processing, with emphasis on ECG signals. She was the recipient of the Best Paper Award at ISABEL 2011 and the Mortara Fellowship at CinC 2014.

She has served as associate Editor for IEEE ICRA 2018 and 2019 and as Guest Editor for the Special Issue on Human-Robot Collaboration in Industrial Applications of Mechatronics (Elsevier) in 2018. She is also member of the Program Committee of IFAC HMS 2019 and co-organized the Workshop “WORKMATE 2018: the WORKplace is better with intelligent, collaborative, robot MATEs” at IEEE ICRA 2018.

Editorial activity

- Associate Editor for Mechatronics (Elsevier)
- Member of the Program Committee of IFAC HMS 2019
- Associate Editor for IEEE ICRA 2018 and 2019
- Guest Editor for the Special Issue on Human-Robot Collaboration in Industrial Applications of Mechatronics (Elsevier), 2018
- Co-organizer of the Workshop “WORKMATE 2018: the WORKplace is better with intelligent, collaborative, robot MATEs” at IEEE ICRA 2018

Scientific publications

International journals

1. C. Talignani Landi, V. Villani, F. Ferraguti, L. Sabattini, C. Secchi, C. Fantuzzi, “Relieving Operators' Workload: Towards Affective Robotics In Industrial Scenarios,” *Mechatronics*, 54 , pp. 144-154, 2018.
2. V. Villani, L. Sabattini, J.N. Czerniak, A. Mertens, C. Fantuzzi, “MATE robots simplifying my work: benefits and socio-ethical implications,” *IEEE Robotics and Automation Magazine*, 25 (1), pp. 37-45, 2018.
3. V. Villani, F. Pini, F. Leali, C. Secchi, “Survey on Human-Robot Collaboration in Industrial Settings: Safety, Intuitive Interfaces and Applications,” *Mechatronics*, 2018
4. V. Villani, L. Sabattini, C. Secchi, M. Minelli, C. Fantuzzi, “A Natural Infrastructure-Less Human-Robot Interaction System,” *IEEE Robotics and Automation Letters*, 2 (3), pp. 1640 - 1647, 2017.
5. A. Fasano, V. Villani, “Baseline Wander Removal for Bioelectrical Signals by Quadratic Variation Reduction,” *Signal Processing*, vol. 99, pp. 48-57, 2014.
6. M. Muratore, F. Conversano, M.D. Renna, P. Pisani, V. Villani, S. Casciaro, “Social Impact of Osteoporotic Fractures: Early Diagnosis and Possible Therapies,” *International Journal of Measurement Technologies and Instrumentation Engineering*, 4 (2), pp. 39-53, 2014.

Selected international conferences

7. V. Villani, F. Pini, F. Leali, C. Secchi, C. Fantuzzi, “Survey on Human-Robot Interaction for Robot Programming in Industrial Applications,” *16th IFAC Symp. Information Control Problems in Manufacturing (INCOM)*, IFAC-PapersOnLine 2018.

8. V. Villani, L. Sabattini, A. Levratti, C. Fantuzzi, "An Industrial Social Network for Sharing Knowledge Among Operators," *16th IFAC Symp. Information Control Problems in Manufacturing (INCOM)*, IFAC-PapersOnLine 2018.
9. F. Loch, J.N. Czerniak, V. Villani, L. Sabattini, C. Fantuzzi, A. Mertens, B. Vogel-Heuser, "An Adaptive Speech Interface for Assistance in Maintenance and Changeover Procedure," *Human-Computer Interaction (HCI)*. Interaction Technologies, Springer, Cham, 2018.
10. G. Lotti, V. Villani, N. Battilani, C. Fantuzzi, "Towards an integrated approach for supporting the workers in Industry 4.0," *1st IEEE Int. Conf. on Industrial Cyber-Physical Systems (ICPS)*, IEEE 2018.
11. V. Villani, L. Sabattini, C. Secchi, C. Fantuzzi, "A Framework for Affect-Based Natural Human-Robot Interaction," *27th IEEE Int. Symp. Robot and Human Interactive Communication (RO-MAN)*, IEEE 2018.
12. V. Villani, B. Capelli, L. Sabattini, "Use of Virtual Reality for the Evaluation of Human-Robot Interaction Systems in Complex Scenarios," *27th IEEE Int. Symp. Robot and Human Interactive Communication (RO-MAN)*, IEEE 2018.
13. L. Sabattini, V. Villani, J.N. Czerniak, F. Loch, A. Mertens, B. Vogel-Heuser, C. Fantuzzi, "Methodological Approach for the Evaluation of an Adaptive and Assistive Human-Machine System," *14th IEEE Conf. Automation Science and Engineering (CASE)*, IEEE 2018.
14. J.N. Czerniak, V. Villani, L. Sabattini, F. Loch, B. Vogel-Heuser, C. Fantuzzi, C. Brandl, A. Mertens, "Systematic approach to develop a flexible adaptive human-machine system, *20th Congress International Ergonomics Association (IEA)*, 2018.
15. V. Villani, L. Sabattini, C. Secchi, C. Fantuzzi, "Natural Interaction Based on Affective Robotics for Multi-Robot Systems," *IEEE Int. Symp. on Multi-Robot and Multi-Agent Systems (MRS)*, IEEE 2017.
16. V. Villani, L. Sabattini, C. Secchi, C. Fantuzzi, "A General Approach to Natural Human-Robot Interaction," *Human Friendly Robotics (HFR)*, Springer, Cham, 2017.
17. V. Villani, L. Sabattini, G. Riggio, A. Levratti, C. Secchi, C. Fantuzzi, "Interacting With a Mobile Robot with a Natural Infrastructure-Less Interface," *IFAC 20th World Congress Int. Federation Autom. Control, IFAC-PapersOnLine* 2017.
18. V. Villani, L. Sabattini, J.N. Czerniak, A. Mertens, B. Vogel-Heuser, C. Fantuzzi, "Towards Modern Inclusive Factories: A Methodology for the Development of Smart Adaptive Human-Machine Interfaces," *22nd IEEE Int. Conf. Emerging Technologies And Factory Automation (ETFA)*, IEEE 2017.
19. L. Sabattini, V. Villani, J.N. Czerniak, A. Mertens, C. Fantuzzi, "Methodological Approach for the Design of a Complex Inclusive Human-Machine System," *13th IEEE Conf. Automation Science and Engineering (CASE)*, IEEE 2017.
20. A. Fasano, S. Longhi, A. Monteriù, V. Villani, "A Detection-Estimation Approach with Refinement to Filtering for Gaussian Systems with Intermittent Observations," *IEEE 55th Annu. Conf. Decision and Control (CDC 2016)*, IEEE 2016, pp. 2035-2040.
21. V. Villani, N. Battilani, G. Lotti, C. Fantuzzi, "MyAID: a Troubleshooting Application for Supporting Human Operators in Industrial Environment," *13th IFAC/IFIP/IFORS/IEA Symp. Analysis, Design, and Evaluation of Human-Machine Systems (HMS 2016)*, IFAC-PapersOnLine 2016.
22. V. Villani, L. Sabattini, N. Battilani, C. Fantuzzi, "Smartwatch-Enhanced Interaction with an Advanced Troubleshooting System for Industrial Machines," *13th IFAC/IFIP/IFORS/IEA Symp. Analysis, Design, and Evaluation of Human-Machine Systems (HMS 2016)*, IFAC-PapersOnLine 2016.
23. A. Fasano, A. Monteriù, V. Villani, "A Detection-Estimation Approach to Filtering with Intermittent Observations with Generally Correlated Packet Dropouts," *IEEE 54th Annu. Conf. Decision and Control (CDC 2015)*, IEEE 2015, pp. 4356 - 4361.
24. A. Fasano, V. Villani, "ECG Baseline Wander Removal with Recovery of the Isoelectric Level," *IEEE Comput. Cardiol. (CinC 2015)*, 2015; vol. 42, pp. 577-580.
25. A. Fasano, V. Villani, "Fast and Effective Estimation of Narrowband Components for Bioelectrical Signals," *37th Annu. Int. Conf. IEEE Eng. Med. Biol. Soc. (EMBC 2015)*, 2015, pp. 3335-3338.
26. A. Fasano, V. Villani, "Statistical Assessment of Performance of Algorithms for Detrending RR series," *37th Annu. Int. Conf. IEEE Eng. Med. Biol. Soc. (EMBC 2015)*, IEEE 2015, pp. 7841-7844.
27. V. Villani, A. Fasano, "A Framework for ECG Signal Preprocessing based on Quadratic Variation Reduction," *IEEE Comput. Cardiol. (CinC 2014)*, 2014; vol. 41, pp. 41-44. (**Recipient of the Mortara fellowship**).
28. A. Fasano, V. Villani, L. Vollero, "ECG Smoothing and Denoising by Local Quadratic Variation Reduction," *4th Int. Symp. Appl. Sci. Biomed. Commun. Tech. (ISABEL 2011)*, 2011. (**Recipient of the Best Paper Award**).