Personal information

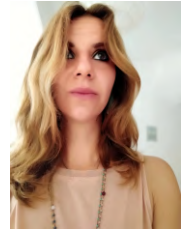|	
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Cenni biografici

Valeria Villani è ricercatrice a tempo determinatopresso il Dipartimento di Scienze e Metodi per l'Ingegneria dell'Università di Modena e Reggio Emilia. Ha conseguito la Laurea e Laurea Specialistica in Ingegneria Biomedica presso l'Università Campus Bio-Medico di Roma rispettivamente nel 2006 e 2009. Nel 2013 ha conseguito il titolo di Dottore di Ricerca in Ingegneria Biomedica presso la stessa università. Ha ricevuto il Best Paper Award in occasione di ISABEL 2011 e la Mortara Fellowship a CinC 2014.

I suoi principali interessi di ricerca includono l'analisi di fattori umani in sistemi di interazione e la progettazione di interfacce antropocentriche per garantire una collaborazione efficiente tra utente e macchine automatiche o robot. Inoltre, ha solide competenze nell'ambito dell'elaborazione di segnali che applica al controllo di robot e all'interazione uomo-robot.

È stata coordinatrice delle attività tecniche del progetto europeo H2020 "Smart and adaptive interfaces for INCLUSIVE work environment" (INCLU-SIVE, GA n. 723373). Si è anche occupata della gestione del progetto e ha coordinato le interazioni all'interno del consorzio e con la Commissione Europea, garantendo il corretto e puntuale svolgimneto delle attività. É stata coordinatrice delle attività tecniche dell'esperimento "COllaborative robot aMPLifying and Extending huMAN capabiliTies" (COMPLEMANT), che è stato parte del progetto europeo H2020 "Smart integrated Robotics system for SMEs controlled by Internet of Things based on dynamic manufacturing processes" (HORSE, GA n. 680734).

È Associate Editor per le riviste Mechatronics (Elsevier) e IEEE Transaction on Automation Science and Engineering, per le conferenze IEEE ICRA dal 2018 e IEEE IROS dal 2023. Inoltre, è stata Guest Editor per la Special Issue su Human-Robot Collaboration in Industrial Applications della rivista Mechatronics (Elsevier) nel 2018. È stata membro del comitato di programma di IFAC HMS 2019 e ha co-organizzato i workshop "WORKMATE 2018: the WORKplace is better with intelligent, collaborative, robot MATEs" in occasione di IEEE ICRA 2018, "Design, Learning, and Control for Safe Human-Robot Collaboration" in occasione di IEEE ICAR 2021 e "SOLAR: Socially-acceptable robots concepts, techniques, and applications" in occasione di IEEE ICRA 2023. É stata General Chair per il 12th International Workshop on Human-Friendly Robotics (HFR 2019).

È stata revisore per il progetto "Credible & Safe Robot Systems" (CredRoS) finanziato a JOANNEUM RESEARCH ROBOTICS dall'Austrian Ministry for Transport, Innovation and Technology. Inoltre, è ha ricoperto il ruolo di exert evaluator per la Commissione Europea per la valutazione delle proposte di progetto nella call HORIZON-CL4-2023-HUMAN-01-CNECT.

Posizione attuale

Date	Agosto 2022 – oggi
Posizione	**Ricercatrice a tempo determinato (art. 24 c.3-b L. 240/10)**
Attività principali	Studio di metodolgie e paradigmi di interazione adattativa ed intelligente per facilitare l'interazione dell'uomo con robot e macchine industriali
Instituzione	Università di Modena e Reggio Emilia

Istruzione ed esperienze accademiche precedenti

Date	Febbraio 2022 – Luglio 2022
Posizione	**Assegnista di ricerca**
Attività principali	Studio di metodolgie e paradigmi di interazione adattativa ed intelligente per facilitare l'interazione dell'uomo con robot e macchine industriali
Instituzione	Università di Modena e Reggio Emilia
Data	Febbraio 2017 – Gennaio 2022
Posizione	**Ricercatrice a tempo determinato (art. 24 c.3-a L. 240/10)**
Main topics	Progettazione di interfacce utente per applicazioni robotiche e di automazione; modellazione dell'utente per applicazioni di affective robotics; progettazione di sitemi di interazione adattativi
Instituzione	Università di Modena e Reggio Emilia
Data	Gennaio 2015 – Gennaio 2017
Posizione	**Assegnista di ricerca post–doc**
Main topics	Progettazione di interfacce utente per applicazioni robotiche e di automazione
Instituzione	Università di Modena e Reggio Emilia
Data	Aprile 2013 – Gennaio 2015
Posizione	**Collaboratrice di ricerca**
Main topics	Elaborazione di segnali biomedici, con enfasi su elettrocardiogramma e serie RR
Instituzione	Università Campus Bio-Medico di Roma
Data	Gennaio 2010 – Aprile 2013
Diploma	**Dottorato di Ricerca in Ingegneria Biomedica**, (finanziato con borsa di studio)
Tesi	A framework for ECG signal processing based on quadratic variation reduction. Tutor: Prof. G. Iannello. Co-tutor: Ing. A. Fasano.
Attività principali	Sviluppo di un framework innovativo per l'elaborazione dei segnali bioelettrici basato sulla riduzione di variazione quadratica, con applicazione ai segnali ECG, EEG, EMG ed EOG
Instituzione	Università Campus Bio-Medico di Roma
Data	Luglio 2009
Certificato	**Abilitazione all'Esercizio della Professione di Ingegnere**
Data	Novembre 2006 – 24 Febbraio 2009
Diploma	**Laurea Specialistica in Ingegneria Biomedica**
Tesi	Analisi di immagini biomediche mediante estrazione di tessiture modellate come campi aleatori markoviani. Relatori: Ing. A. Fasano, Ing. L. Vollero.

Attività principali	Elaborazione ed analisi di immagini biomediche, campi aletaori di Markov
Voto	110/110 con Lode
Instituzione	Università Campus Bio-Medico di Roma

Data	Settembre 2003 – 25 Ottobre 2006
Diploma	**Laurea in Ingegneria Biomedica**
Tesi	Sistemi per il rilascio controllato di farmaci nella cavità intracranica: aspetti di sensorizzazione e controllo. Relatore: Prof. E. Guglielmelli. Relatori: Ing. D. Accoto, Ing. S. Petroni.
Attività principali	Biomeccatronica
Voto	110/110 con Lode
Instituzione	Università Campus Bio-Medico di Roma

Scientific publications

Riviste internazionali

[1] Valeria Villani, Marco Picone, Marco Mamei, and Lorenzo Sabattini. A digital twin driven human-centric ecosystem for industry 5.0. IEEE Transactions on Automation Science and Engineering, 2024

[2] Andreas Kornmaaler Hansen, Valeria Villani, Andrea Pupa, and Astrid Heidemann Lassen. Introducing novice operators to collaborative robots: a hands-on approach for learning and training. IEEE Transactions on Automation Science and Engineering, 2024

[3] Valeria Villani, Cristian Secchi, Marco Lippi, and Lorenzo Sabattini. A general pipeline for online gesture recognition in human-robot interaction. IEEE Transactions on Human-Machine Systems, 53:315–324, 2023

[4] Federica Ferraguti, Valeria Villani, and Chiara Storchi. Mywelder: A collaborative system for intuitive robot-assisted welding. Mechatronics, 89:102920, 2023

[5] Valeria Villani, Lorenzo Sabattini, Giorgia Zanelli, Enrico Callegati, Benjamin Bezzi, Paulina Barańska, Zofia Mockałło, Dorota Żołnierczyk-Zreda, Julia N Czerniak, Verena Nitsch, Alexander Mertens, and Cesare Fantuzzi. A user study for the evaluation of adaptive interaction systems for inclusive industrial workplaces. IEEE Transactions on Automation Science and Engineering, 19(4):3300–3310, 2022

[6] Elisa Prati, Valeria Villani, Fabio Grandi, Margherita Peruzzini, and Lorenzo Sabattini. Use of interaction design methodologies for human-robot collaboration in industrial scenarios. IEEE Transactions on Automation Science and Engineering, 19(4):3126–3138, 2022

[7] Elisa Prati, Valeria Villani, Margherita Peruzzini, and Lorenzo Sabattini. An approach based on VR to design industrial human-robot collaborative workstations. Applied Sciences, 11(24), 2021

[8] Valeria Villani, Lorenzo Sabattini, Paulina Barańska, Enrico Callegati, Julia N. Czerniak, Adel Debbache, Mina Fahimipirehgalin, Andreas Gallasch, Frieder Loch, Rosario Maida, Alexander Mertens, Zofia Mockałło, Francesco Monica, Verena Nitsch, Engin Talas, Elisabetta Toschi, Birgit Vogel-Heuser, Jeanmarc Willems, Dorota Żołnierczyk-Zreda, and Cesare Fantuzzi. The INCLUSIVE system: A general framework for adaptive industrial automation. IEEE Transactions on Automation Science and Engineering, 18(4):1969 – 1982, 2021

[9] Valeria Villani, Lorenzo Sabattini, Frieder Loch, Birgit Vogel-Heuser, and Cesare Fantuzzi. A general methodology for adapting industrial HMIs to human operators. IEEE Trans. Automation Science and Engineering, 18(1):164 – 175, 2021

[10] Julia N. Czerniak, Nikolas Schierhorst, Valeria Villani, Lorenzo Sabattini, Christopher Brandl, Alexander Mertens, Maximilian Schwalm, and Verena Nitsch. The index of cognitive activity - eligibility for task-evoked informational strain and robustness towards visual influences. Applied Ergonomics, 92:1033–1042, 2021

[11] Valeria Villani, Massimiliano Righi, Lorenzo Sabattini, and Cristian Secchi. Wearable devices for the assessment of cognitive effort for human-robot interaction. IEEE Sensors Journal, 20(21):13047–13056, 2020

[12] Valeria Villani, Beatrice Capelli, Cristian Secchi, Cesare Fantuzzi, and Lorenzo Sabattini. Humans interacting with multi-robot systems: a natural affect-based approach. Autonomous Robots, 44(3):601–616, 2020

[13] Valeria Villani, Julia N. Czerniak, Lorenzo Sabattini, Alexander Mertens, and Cesare Fantuzzi. Measurement and classification of human characteristics and capabilities during interaction tasks. Paladyn. Journal of Behavioral Robotics, 10(1):182–192, 2019

[14] Francesco Leali, Fabio Pini, and Valeria Villani. Guest editorial note: Special issue on human-robot collaboration in industrial applications. Mechatronics, 58:80–81, 2019

[15] Valeria Villani, Fabio Pini, Francesco Leali, and Cristian Secchi. Survey on human-robot collaboration in industrial settings: Safety, intuitive interfaces and applications. Mechatronics, 55:248–266, 2018

[16] Valeria Villani, Lorenzo Sabattini, Julia N. Czerniak, Alexander Mertens, and Cesare Fantuzzi. MATE robots simplifying my work: benefits and socio-ethical implications. IEEE Robot. Automat. Mag., 25(1):37–45, 2018

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[20] Antonio Fasano and Valeria Villani. Baseline wander removal for bioelectrical signals by quadratic variation reduction. Signal Process., 99:48–57, 2014

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[21] Marco Picone, Valeria Villani, Marcello Pietri, and Luca Bedogni. Towards coordinating machines and operators in industry 5.0 through the web of things. In 2024 IEEE 21st Consumer Communications & Networking Conference (CCNC), pages 01–06. IEEE, 2024

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PhD thesis

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