PERSONAL INFORMATION

Sara Comai

Office: Politecnico di Milano, P.zza Leonardo da Vinci 32, 20133, Milano (Italy)

| *Date of birth* | *Nationality*

Enterprise	University	EPR
☐ Management Level	☐ Full professor	☐ Research Director and 1st level Technologist / First Researcher and 2nd level Technologist
☐ Mid-Management Level	☒ Associate Professor	☐ Level III Researcher and Technologist
☐ Employee / worker level	☐ Researcher and Technologist of IV, V, VI and VII level / Technical collaborator	☐ Researcher and Technologist of IV, V, VI and VII level / Technical collaborator

WORK EXPERIENCE

2007 - Present

Associate Professor in Computer Engineering (ING-INF/05)

Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano (Italy)

- Research activities in ICT Methods and Algorithms for Health-Related Quality of Life; ICT solutions based on smart home and ambient assisted living forf elderly, frail people, and people with mild cognitive impairment, Indoor and outdoor trakcing systems for localization; tools for city accessibility for people with mobility problemes; ICT methods for the wellbeing at workplaces; advanced user interfaces base on haptic interaction and gesture recognition.
- Member of the national Assistive Technology Lab (AsTech), CINI, Italy
- Node Coordinator of the national Digital Life Lab CINI for “Politecnico di Milano” (2022-present);
- Coordinator of the Course of Studies in COMPUTER ENGINEERING - Bachelor ON LINE - Como Campus (18/12/2008-31/12/2010)

2002 - 2007

Assistant Professor in Computer Engineering (ING-INF/05)

Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano (Italy)

- Research activities: Model-driven design and methodologies for Web and Rich Internet applications, enriched with workflows and Web services;

2000 – 2002

Research Assistant in Computer Engineering (ING-INF/05)

Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano (Italy)

- Research activities: Model-driven design and methodologies for Web applications, graphical queries over XML data; formal analysis of hypertext semantics.

1996– 2000

PhD in Computer Science and Automation

Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano (Italy)

- Research activities: Graphical queries over XML data; graphical query languages for semi-structured data.

EDUCATION AND TRAINING

01/2000

Ph.D in Computer Science and Automation

Dipartimento di Elettronica e Informazione, Politecnico di Milano, Milano, Italy.
Advisor: Prof.ssa L. Tanca, P. Fraternali, Politecnico di Milano, Milano, Italy.

Main topics: Graphical queries over XML data; graphical query languages for semi-structured data.
Winner of the Chorafas Prize for the best thesis in Computer Science and Automation for the XII cycle.

04/1996 **Laurea in Management Engineering**
Politecnico di Milano, Milano, Italy; final grade 96/100.
Advisor: Prof.ssa L. Tanca, P. Fraternali, Politecnico di Milano, Milano, Italy.
Main topics: Active databases: formal analysis of the properties of termination and confluecne

PERSONAL SKILLS

Mother tongue(s)

Other language(s)

ADDITIONAL INFORMATION

Scientific Activities (selected)

Recent activities targeting ageing/frail people include:
- Member of the Editorial Committee of the journal IOS "Technology and Disability"
- National Contact Person of AAATE (Association for the Advancement of Assistive Technology in Europe (aaate.net)

- Chair of the special session "WELL-BEING FOR FRAGILE PEOPLE (WHELP 2018)" GOODTECHS 2018 4th nternational Conference on Smart Objects and Technologies for Social Good, November 28-30, 2018, Bologna, Italy
And of WHELP 2019 at GOODTECHS 2019 September 25-27, 2019, Valencia, Spain.
- Track chair of the track "Digital Life for Human Well-being (DLHWB)", 34th ACM/SIGAPP Symposium On Applied Computing Limassol, Cyprus, April 8-12, 2019.

Technology Transfer and Grant

- Co-Founder of LYOTEH (2021), a Spin-off of Politecnico di Milano, working in the field of ICT for smart care, monitoring solutions for the well-being of frail persons and caregivers.LyoTech S.R.L. is registered in the special section of the register of companies as an INNOVATIVE START-UP.

Publications

Scopus Metrics Overview:
119 Documents by author; 1239 Citations by 1034 documents; 18 h-index, 194 co-authors

Google Scholar Metrics Overview:
3813 citations, h-index 27, i10-index 52

Recent publications related to assistive technology

- [2023] Sara Comai, Lorenzo Carpaneto, Andrea Masciadri, Giuseppe Pozzi, Fabio Salice: Sleep Monitoring: Enriching the Traditional Approach by Sensor-collected Data. ICHI 2023: 352-360
- [2023] Sara Comai, Andrea Masciadri, Fabrice Monasterio, Fabio Motetta, Giuseppe Pozzi, Fabio Salice: CardiaPPG - A Portable, Low-Cost Photopletismograph for the Evaluation of the Cardiovascular Age. ICDH 2023: 227-233
- [2023] Fabio Salice, Gioele Sassi, Afra Scaglioni, Andrea Masciadri, Sara Comai: Preventing Muscle Imbalance: A Cost-Effective Solution for Home Exercise. GoodIT 2023: 173-181

- [2023] Fabio Salice, Andrea Masciadri, Giuseppe Di Blasio, Matteo Venturelli, Sara Comai: ADLnet: A 1d-CNN for Activity of Daily Living Recognition in Smart Homes. UCAmI (2) 2023: 76-87
- [2023] Sara Comai, Giovanna Viana Mundstock Freitas, Kelly Xu, Marta Conte, Anita Colombo, Senja Pöyhönen, Marco Ajovalasit, Fabio Salice: Enhancing Unobtrusive Home Technology Systems with a Virtual Assistant for Mood and Social Monitoring. UCAmI (1) 2023: 81-93
- [2023] Sara Comai, Andrea Masciadri, Davide Zuccarello, Fabio Salice: NeeMAS: A Need-Based Multi-agent Simulator of Human Behavior for Long-Term Drifts in Smart Environments. UCAmI (2) 2023: 88-99
- [2022] A Multi-Resident Number Estimation Method for Smart Homes. Andrea Masciadri, Changhong Lin, Sara Comai, Fabio Salice: Sensors 22(13): 4823, 2022
- [2022] BUZZBAND: A Vibrating Wristband for Hearing-Impaired Elderly People. Elisabetta Romoli, Jacopo Pollastri, Andrea Masciadri, Sara Comai, Fabio Salice.ICCHP-AAATE (2) 2022: 113-120
- [2022] A Review on Technological Solutions Supporting People with Dementia in the Activity of Dressing. Sofia Ghezzi, Andrea Masciadri, Fabio Salice, Sara Comai. ICCHP-AAATE (2) 2022: 168-175
- [2021] High-efficiency multi-sensor system for chair usage detection, Baserga, A., Grandi, F., Masciadri, A., Comai, S., Salice, F. - Sensors, 2021, 21(22), 7580
- [2021] Understanding social behaviour in a health-care facility from localization data: A case study, Bellini, G., Cipriano, M., Comai, S., Rossi, G., Salice, F. - Sensors, 2021, 21(6), pp. 1–22, 2147.
- [2021] CESS: Closed environment safety system, Corazza, F., Troisi, F., Comai, S., Masciadri, A., Salice, F., GoodIT 2021 - Proceedings of the 2021 Conference on Information Technology for Social Good, 2021, pp. 133–138
- [2021] Improving Work Life Conditions via Portable Knowledge-Driven Recommender System. M. Atzori, A. Barenghi, S.Comai, M. Fugini, D. Marcia, G. Pelosi, ; Sanguinetti, V. Scotti. SEBD 2021: 498-505
- [2020] Monitoring Cooker Activities Using a Grid-EYE Infrared Array Sensor Bafaro, E., Di Bartolo, D., Masciadri, A., Comai, S., Salice, F. ACM International Conference Proceeding Series, 2020, pp. 1–5
- [2020] Decision Support Systems to Promote Health and Well-Being of People During Their Working Age: The Case of the WorkingAge EU Project. R.M. de Almeida, A. Grau Aberturas, Y. Bueno Aguado, M. Atzori, A. Barenghi, G. Borghini, C. A. Catalina Ortega, S. Comai, R. L. Durán, M. Fugini, H. Gunes, B.M. Lancis, G. Pelosi, V. Ronca, L. Sbattella, R. Tedesco, T. Xu SAMOS 2020: 336-347
- [2019] “Maps for Easy Paths (MEP): A Mobile Application for City Accessibility” S. Comai, E. De Bernardi, F. Salice, A. Vali. In “Mobile Solutions and Their Usefulness in Everyday Life” Editor Sara Maria da Cruz Maia de Oliveira Paiva, EAI/Springer Innovations in Communication and Computing , Hardcover ISBN 978-3-319-93490-7, Series ISSN 2522-859520, pp. 105-125, 2019
  LINK: https://link.springer.com/chapter/10.1007/978-3-319-93491-4_6
- [2019] SMARE: Semi-supervised method for activities of daily living recognition
- Masciadri, A., Comai, S., Salice, F. Conference Proceedings - IEEE International Conference on Systems, Man and Cybernetics, 2019, 2019-October, pp. 3403–3409, 8914279
- [2019] Wellness indexes to assess quality of life: A technological support, Masciadri, A., Sacchi, M., Comai, S., Salice, F., ACM International Conference Proceeding Series, 2019, pp. 213–218
- [2019] Understanding home inactivity for human behavior anomaly detection, Masciadri, A., Scarantino, C., Comai, S., Salice, F., ACM International Conference Proceeding Series, 2019, pp. 90–95
- [2019] Wellness assessment of alzheimer’s patients in an instrumented health-care facility
- Masciadri, A., Comai, S., Salice, F. Sensors (Switzerland), 2019, 19(17), 3658
- [2019] Disseminating synthetic smart home data for advanced applications, Masciadri, A., Veronese, F., Comai, S., Carlini, I., Salice, F., CEUR Workshop Proceedings, 2019, 2482
- [2018] Non-invasive monitoring system to detect sitting people, Rosato, D., Comai, S., Masciadri, A., Salice, F., ACM International Conference Proceeding Series, 2018, pp. 261–264
- [2018] Supporting Alzheimer's residential care a novel indoor localization system
- Masciadri, A., Carlini, I., Comai, S., Salice, F. ICETE 2018 - Proceedings of the 15th International Joint Conference on e-Business and Telecommunications, 2018, 1, pp. 272–278

- [2018] CLONE: a Promising System for the Remote Monitoring of Alzheimer's Patients: An Experimentation with a Wearable Device in a Village for Alzheimer's Care. F. Amato, S. Bianchi, S. Comai, P. Crovari, M.G. Grillo Pasquarelli, A. Imtiaz, A. Masciadri, M. Toldo, E. Yuyar GOODTECHS 2018: 255-260
- [2018] ALMA: An Indoor Localization and Navigation System for the Elderly, Comai, S., De Bernardi, E., Masciadri, A., ...Salice, F., Veronese, F., Lecture Notes of the Institute for Computer Sciences, Social-Informatics and Telecommunications Engineering, LNICST, 2018, 233, pp. 82–91
- [2017] “Enriching Geographic Maps with Accessible Paths Derived from Implicit Mobile Device Data Collection” L. Biagi, S. Comai, R. Mangiarotti, M. Matteucci, M. Negretti. In “Enriching Urban Spaces with Ambient Computing, the Internet of Things, and Smart City Design” Editors Shin'ichi Konomi and George Roussos, IGI Global, pp. 89 – 113, 2017 LINK: https://www.igi-global.com/chapter/enriching-geographic-maps-with-accessible-paths-derived-from-implicit-mobile-device-data-collection/168247?utm_campaign=shareaholic&utm_medium=copy_link&utm_source=bookmark
- [2017] “Maps for Easy Paths (MEP): Accessible Paths Tracking and Reconstruction” S. Comai, E.O. De Bernardi, M. Matteucci, F. Salice. EAI Transactions of Internet of Things (ISSN: 2414-1399), Volume 3, Fascicolo 9, Pagine 1 – 10, 2017
  LINK: https://publications.eai.eu/index.php/IoT/article/view/692/554
- [2016] “Maps for Easy Paths (MEP): Enriching Maps with Accessible Paths Using MEP Traces”. Sara Comai, Emanuele De Bernardi, Matteo Matteucci, Fabio Salice. GOODTECHS 2016: 254-263
  LINK: https://link.springer.com/chapter/10.1007/978-3-319-61949-1_27
- [2016] “IOM-Internet of Mobility: A Wearable Device for Outdoor Data Collection”, Francesco Frulio, Erfan Sheikhi, Lucia Rossazza, Gabriele Perfetto, Andres Calvachi, Gianluca Picco, Sara Comai GOODTECHS 2016: 88-95
  LINK: https://link.springer.com/chapter/10.1007/978-3-319-61949-1_10
- [2016] “Map for Easy Paths: a collaborative project for accessibility mapping thorough mobile data fusion”, Gianluca Bardaro , Davide A. Cucci , Andrea Romanoni , Matteo Matteucci , Sara Comai (oral presentation) - European Calibration and Orientation Workshop. Lausanne, Switzerland, February 2016

Recent Projects

- **MEP** - Project Polisocial Award 2014 - MEP-Maps for Easy Paths - Project goal: enrichment of geographic maps with information on the accessibility of the routes urban pedestrian streets, aimed at people with mobility problems and, in particular, with motor disabilities. Role: Coordinator Period: from 01-10-2014 to 30-09-2016
  Link: http://www.polisocial.polimi.it/en/project-list/
  https://mep5x1000.wixsite.com/mepapp

  The main results of the project include: • The design and implementation of tools for data collection on accessible routes and on any barriers / obstacles based on the use of smartphones. • A methodology for managing the dynamic update of the collected data, with a good quality of route reconstruction. • The implementation of an application for mobile tools for the visualization of accessibility maps to end users (tourists and citizens in general) and to public institutions. • The possibility to use the data collected in a city by local administrations in order to carry out analysis campaigns on the territory, to promote accessible tourism, or to receive reports on problems of accessibility on which to intervene promptly. • Greater awareness of the population, by means of appropriate communication campaigns regarding the problems of people with mobility impairments.

  Projects with schools of different levels have been carried, especially with middle school students and within university courses, mainly in architecture between 2015 and 2019 (before pandemic).

- AAL **ALMA** - "Aging without Losing Mobility and Autonomy" (http://www.alma-aal.org) to support the mobility of people with reduced mobility through an autonomous wheelchair navigation and orientation system. Partners: SUPSI - CH, Info Solution SpA, VCA Technology Ltd. (UK), Istituti Sociali di Chiasso (CH), Clinica Hildebrand (CH), Università di Wurzburg, Department of Criminal Law, Criminal Justice, Legal Theory, Information and Computer Science (D), Degonda Rehab SA (CH), Politecnico di Milano. Role: member Period: from 01-04-2013 to 31-03-2016
  LINK: http://www.aal-europe.eu/projects/alma/

The main results developed at Politecnico di Milano (Italy) include: • *A Personal Mobility Kit* for electric powered wheelchairs, allowing them to perform automatic or assisted navigation and to interact with the surrounding environment; • A *Personal Navigation Assistant*, providing a user-friendly interface to all ALMA functionalities, tailored to the specific user requirements and physical limitations.

- **CrowdInsights** - EIT Digital 2017 - CrowdInsights (Digital Cities Action Line Innovation Activity) - Responsible for EIT 17068-A1704 - Project goal: to collect data from sensors, mobile phones and social media to understand the urban dynamics (how, when and where people move within a city). Period: January-December 2017.

- National technology CLUSTER MIUR - **SHELL** "Shared interoperable Home Ecosystems for a green, comfortabLe and safe Living "(Shared and interoperable domestic ecosystems for sustainable, comfortable and safe living environments). In particular, Sara Comai participated in the activities of the realization objective OR3 (Comfort Manager) to improve living comfort. The activities consisted in the identification of well-being indices and the creation of a demo for the collection of data through sensors and their analysis. Cluster partners: Homelab Consortium, GENERA Consortium, TelecomItalia, Habitech District, Rete High Tech Marche (HTM), Polytechnic University of Marche, Area Science Park – Trieste, Politecnico di Milano. Role: member. Period: from 01-11-2015 to 01-06-2017

- H2020 **WorkingAge** - "Smart Working environments for all Ages" having the goal of improving the working conditions and quality of life of people 50+ in the workplace, through monitoring based on Iot sensors and questionnaires. Partners: ITCL Institute of Technology (E), audEERING (D), Telespazio (F), Exus (UK-Greece), Green Communications (F), BrainSigns (I), Fundación INTRAS (E), TMA (Gr), EENA (B), RWTH Aachen University (D), The University of Cambridge (UCAM) (UK), Politecnico di Milano. Role: member. Period: from 01-02-2019 to today.

- **LoViCoSpec** project for the development of an industrial inspection system based on hyperspectral cameras. In particular we deal with the use of machine / deep learning techniques for image analysis. Project partners: Whirlpool, Siemens, CEA, Politecnico di Milano. Role: member. Period: from 01-01-2020 to 31-12-2020

- H2020 - **iREL4.0** "Intelligent Reliability 4.0", whose goal is to improve the reliability of electronic components and systems by reducing failure rates along the entire supply chain value. Within this project Sara Comai applies behavioral drift analysis techniques resulting from the experience of applying these techniques for monitoring people in the home. The iRel4.0 consortium is made up of 75 established participants from 13 European Member States and associated countries that constitute a balanced mix of industry and research with skills and complementary competences. Role: member. Period: from 01-05-2020 to today.

Firmato digitalmente da:SARA COMAI

Organizzazione:

POLITECNICO DI MILANO/80057930150