enrico.martini@univr.it
martini.enrico1997@gmail.com
Verona, Italy

Enrico Martini

Postdoctoral Researcher

ORCID
Linkedin
Scholar

Enrico Martini is a postdoctoral researcher at the Department of Engineering for Innovation Medicine, University of Verona.

Technical overview

Research interests Human Motion Modelling, Information Fusion, Human-Robot Interaction
Coding languages Python, Matlab, CUDA C++, C

Research Experience and Education

Postdoctoral Researcher **Oct 2024 – current**
Department of Engineering for Innovation Medicine, University of Verona Verona, Italy
Efficient human motion models for marker-less human-robot interaction.

Ph.D., Computer Science **Oct 2021 – May 2025**
Department of Computer Science, University of Verona Verona, Italy
Efficient Deep Learning methods for real-time human motion denoising and completion on edge architectures.

Visiting Scholar **Gen 2024 – Jul 2024**
Department of Mechanical Engineering and applied Mechanics, University of Pennsylvania Philadelphia, PA, USA
Real-time vision-based collision prediction and avoidance for safe human-robot coexistence and physical assistance.

ELLIS Summer School on Large-Scale AI for Research and Industry **Sep 2023**
University of Modena and Reggio Emilia, Modena, Italy
Developing and training large-scale Deep Learning applications for Computer Vision.

PUMPS+AI Summer School **Sep 2022**
Barcelona Supercomputing Center (BSC) Barcelona, Spain
Cutting-edge techniques to efficiently develop Artificial Intelligence applications for many-core processors and GP-GPU.

Research Scholarship **May 2021 – Sep 2021**
Industrial Computer Engineering Lab (ICE LAB), University of Verona Verona, Italy
Development of Human Pose Estimation software distributed on embedded systems for industrial monitoring and safety at work.

Master's Degree in Computer Science (GPA: 4.00/4.00) - cum laude **Oct 2019 – Jul 2021**
University of Verona Verona, Italy

Research Internship **Sep 2018 – May 2021**
Parallel Computing Lab (PARCO LAB), University of Verona Verona, Italy
Development of Human Pose Estimation software applications on embedded systems for real-time edge computing.

Bachelor's Degree in Computer Science (GPA: 4.00/4.00) **Oct 2016 – Jul 2019**
University of Verona Verona, Italy

Teaching activities

Temporary Professor **Oct 2024 – Sep 2026**
Department of Engineering for Innovation Medicine, University of Verona Verona, Italy.

- *"Programming for cyber-physical systems"*, BSc in Computer Engineering for Robotics and Intelligent Systems. 2025/2026 , 2024/2025

Teaching Assistant **Oct 2021 – Jul 2024**
Department of Engineering for Innovation Medicine, University of Verona Verona, Italy.

- *"Programming languages and programing tools with laboratory"*, BSc in Human Centered Medical System Engineering. 2023/2024 , 2022/2023
- *"Programming I"*, BSc in Computer Science. 2021/2022

International Speakings

- Oral Poster Presentation, *2025 Design, Automation & Test in Europe Conference (DATE)*, 30 Mar 2025, Lyon, France.
- Oral Paper Presentation, *2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 15 Oct 2024, Abu Dhabi, United Arab Emirates.
- Oral Paper Presentation, *33rd IEEE International Conference on Robot and Human Interactive Communication (RO-MAN)*, 27 Aug 2024, Pasadena, California, USA.
- Invited Talk, *Figueroa Robotic Laboratory, Department of Mechanical Engineering and Applied Mechanics, University of Pennsylvania*, 31 Jan 2024, Philadelphia, Pennsylvania, USA.
- Oral Paper Presentation, *44rd Annual International Conference of the IEEE Engineering in Medicine Biology Society (EMBC)*, 14 Jul 2022, Glasgow, Scotland, United Kingdom.
- Oral Paper Presentation, *IEEE International Conference on Digital Health (ICDH)*, 13 Jul 2022, Barcelona, Spain.
- University Booth Presentation, *ACM/IEEE Design, Automation and Test in Europe (DATE)*,5 Feb 2021, Grenoble, France.

Projects and Fundings

Collaborice: Human-robot interaction for Industry 5.0. **2024-2025**
PNRR. Role: research group member.

PREPARE: Personalized Engine for Prostate Cancer Evaluation **2023-2026**
Ministry of economic development. Role: research group member.

Publications

[1] E. Martini, A. Calanca, and N. Bombieri, "Denoising and completion filters for human motion software: A survey with code," *Computer Science Review*, 2025.

[2] M. Boldo, R. Di Marco, S. Aldegheri, E. Martini, M. Cosma, A. Baricich, G. Gasperini, A. Picelli, N. Smania, and N. Bombieri, "A markerless platform for automatic assessment of gait based on human pose estimation: A proof of concept," *Biomedical Signal Processing and Control*, vol. 112, p. 108 453, 2026, ISSN: 1746-8094.

[3] N. Valè, A. Righetti, E. Martini, M. Boldo, N. Bombieri, and N. Smania, "Does proprioceptive impairment affect feedforward motor control? a cross-sectional study on patients with brain damage," *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 2024.

[4] E. Martini, M. Boldo, and N. Bombieri, "Flk: A filter with learned kinematics for real-time 3d human pose estimation," *Signal Processing*, p. 109 598, Jul. 2024, ISSN: 0165-1684. DOI: 10.1016/j.sigpro.2024.109598.

[5] M. Boldo, M. De Marchi, E. Martini, and N. Bombieri, "Domain-adaptive online active learning for real-time intelligent video analytics on edge devices," *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, p. 10, Jul. 2024.

[6] E. Martini, H. Parekh, S. Peng, N. Bombieri, and N. Figueroa, "A robust filter for marker-less multi-person tracking in human-robot interaction scenarios," in *2024 33rd IEEE International Conference on Robot and Human Interactive Communication (RO-MAN)*, IEEE, 2024, pp. 1–6.

[7] C. Bozzini, M. Boldo, E. Martini, and N. Bombieri, "A real-time filter for human pose estimation based on denoising diffusion models for edge devices," in *2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, IEEE, 2024, pp. 1–6.

[8] C. Bozzini, M. Boldo, E. Martini, N. Bombieri, *et al.*, "Late breaking results: A real-time diffusion-based filter for human pose estimation on edge devices," pp. 1–2, 2024.

[9] M. Boldo, M. De Marchi, E. Martini, S. Aldegheri, D. Quaglia, F. Fummi, and N. Bombieri, "Real-time multi-camera 3d human pose estimation at the edge for industrial applications," *Expert Systems with Applications*, vol. 252, p. 124 089, 2024.

[10] S. Aldegheri, M. Boldo, C. Bozzini, M. DE MARCHI, R. Di Marco, E. Martini, N. Bombieri, *et al.*, "A verification platform for human pose estimation models," in *IEEE LATS'24*, 2024, pp. 1–6.

[11] M. Boldo, R. Di Marco, E. Martini, M. Nardon, M. Bertucco, and N. Bombieri, “On the reliability of single-camera markerless systems for overground gait monitoring,” *Computers in biology and medicine*, p. 108 101, 2024.

[12] F. Cunico, S. Aldegheri, A. Avogaro, M. Boldo, N. Bombieri, L. Capogrosso, A. Caputo, D. Carra, S. Centomo, D. S. Cheng, *et al.*, “Enhancing safety and privacy in industry 4.0: The ice laboratory case study,” *IEEE Access*, 2024.

[13] E. Martini, M. Boldo, S. Aldegheri, N. Valè, M. Filippetti, N. Smania, M. Bertucco, A. Picelli, and N. Bombieri, “Enabling gait analysis in the telemedicine practice through portable and accurate 3d human pose estimation,” *Computer Methods and Programs in Biomedicine*, vol. 225, p. 107 016, 2022.

[14] E. Martini, N. Vale, M. Boldo, A. Righetti, N. Smania, and N. Bombieri, “On the pose estimation software for measuring movement features in the finger-to-nose test,” in *2022 IEEE International Conference on Digital Health (ICDH)*, IEEE, 2022, pp. 77–86.

[15] E. Martini, M. Boldo, S. Aldegheri, N. Valé, M. Filippetti, N. Smania, M. Bertucco, A. Picelli, and N. Bombieri, “Preserving data privacy and accuracy of human pose estimation software based on cnn s for remote gait analysis,” in *2022 44th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)*, IEEE, 2022, pp. 3468–3471.

[16] E. Martini, M. Boldo, S. Aldegheri, M. De Marchi, N. Vale, M. Filippetti, N. Smania, M. Bertucco, A. Picelli, and N. Bombieri, “Real-time human pose estimation at the edge for gait analysis at a distance,” in *2022 18th International Conference on Distributed Computing in Sensor Systems (DCOSS)*, IEEE, 2022, pp. 45–48.

[17] L. Geretti, S. Centomo, M. Boldo, E. Martini, N. Bombieri, D. Quaglia, and T. Villa, “Process-driven collision prediction in human-robot work environments,” in *2022 IEEE 27th International Conference on Emerging Technologies and Factory Automation (ETFA)*, IEEE, 2022, pp. 1–8.

[18] M. De Marchi, F. Lumpp, E. Martini, M. Boldo, S. Aldegheri, and N. Bombieri, “Efficient ros-compliant cpu-igpu communication on embedded platforms,” *Journal of Low Power Electronics and Applications*, vol. 11, no. 2, p. 24, 2021.