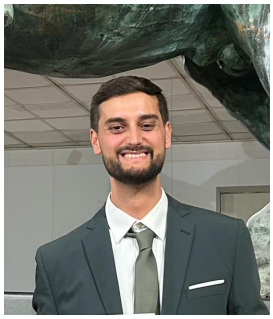
europass Curriculum vitae

## PERSONAL INFORMATION

# Christian Tamantini




via dei Glicini 8, 01100, Viterbo, VT, Italy

+39 392 1424159

tamantinichristian@gmail.com christian.tamantini@cnr.it

linkedin.com/in/christian-tamantini-393425a0

ORCID 0000-0001-6238-2241


Gender Male | Date of birth 25 December 1993 | Nationality Italian

## EMPLOYMENT

**May 2024 – Present** — **Fixed-Term Researcher, Planning and Scheduling Technology Lab**

ISTC – CNR, Rome, Italy

- Design of cognitive architectures for plan-based, personalized rehab programs with real-time multimodal feedback.
- Development of user-state estimation pipelines (facial emotion recognition, workload, kinematics) to adapt robot coaching.

## EDUCATION AND TRAINING

**2019 – 2022** — **Doctor of Philosophy in Science and Engineering for Humans and the Environments: Curriculum Bioengineering (ING-IND/34)**

- Thesis title: *"User State Estimation Methods for Tailoring Human-Robot Interaction"*
- The thesis proposes innovative methods to improve robot-assisted rehabilitation and worker health, including adapted control strategies and the use of wearable sensors. It also explores the positive impact of collaborative robots and wearable passive exoskeletons, providing innovative solutions in contexts such as industry and COVID centers.
- Supervisor: Prof. Loredana Zollo - CREO Lab, Università Campus Bio-Medico di Roma

Università Campus Bio-Medico di Roma, Via Álvaro del Portillo, 21, 00128, Rome (RM), Italy

**2020** — **State certification to practice as an engineer**

Università Campus Bio-Medico di Roma, Via Álvaro del Portillo, 21, 00128, Rome (RM), Italy

**2019 – 2020** — **Postgraduate Advanced School in Artificial Intelligence**

- The School is dedicated to training specialized professionals and researchers in AI, particularly deep neural networks, and computational modeling of the brain, behavior, and society. While not exhaustive in covering all AI topics, these areas serve as a foundational focus, building on the core competencies of the supporting research and professional network.
- Main Courses: Machine Learning, Deep Learning, Computer Vision

ISTC Roma 1 (sede centrale) Via Giandomenico Romagnosi 18a, 00196, Roma (RM), Italy

**2016 – 2018** — **M.Sc. in Biomedical Engineering (LM-21)**

- Thesis Title: *"Trajectory Planning of working tasks and control of an anthropomorphic manipulator with the integrated use of DMP and RGB-D camera"*
- Mark 110/110 cum laude
- This thesis proposes a robotic rehabilitation system for patients with musculoskeletal disorders in working environments. Using an RGB-D camera and an anthropomorphic manipulator, modules were developed to estimate the pose of objects, plan trajectories, and create a database of working gestures.
- Supervisor: Prof. Loredana Zollo - CREO Lab, Università Campus Bio-Medico di Roma
- Co-Supervisors: Eng. Francesca Cordella and Eng. Clemente Lauretti - CREO Lab, Università Campus Bio-Medico di Roma

Università Campus Bio-Medico di Roma, Via Álvaro del Portillo, 21, 00128, Rome (RM), Italy

2012 – 2016 **B.Sc. in Medical Engineering (L-9)**

– Mark 102/110
University of Tor Vergata, Via Cracovia, 50, 00133, Rome (RM), Italy

2006 – 2012 **High school leaving qualification in scientific studies**

– Mark 82/100
Scientific High School “Paolo Ruffini”, Piazza Dante Alighieri, 13, 01100, Viterbo (VT), Italy

## WORKING EXPERIENCE

May 2024 – current **Fixed Term Researcher**

I am responsible for developing and validating automatic systems for motor and cognitive rehabilitation using social robotic systems. This involves the creation of a cognitive architecture for the planning of customized exercise programmes and the provision of real-time feedback.

ISTC - CNR, Via Giandomenico Romagnosi 18a, 00196, Roma (RM), Italy

Feb 2023 – May 2024 **Postdoctoral Research Fellow**

I have been awarded a research grant to conduct a research collaboration on the "**SPINE4.0**: Development of an innovative, multi-disciplinary and integrated approach for workers suffering from degenerative pathologies of the lumbar spine based on advanced technologies, capacity building and feasibility analysis for the creation of a reference center for prevention, diagnosis, treatment and reintegration into work" project with the Advanced Robotics and Human-Centred Technologies (CREO Lab)

Università Campus Bio-Medico di Roma, Via Álvaro del Portillo, 21, 00128, Rome (RM), Italy

2023 **Expert Reviewer of research projects for Hungarian National Research**

Development and Innovation Office, Hungary

Nov 2019 – Nov 2022 **Ph.D. Scholarship**

I have been awarded a scholarship to pursue my Ph.D. program in Science and Engineering for Humans and the Environments: Curriculum Bioengineering (ING-IND/34), XXXV Cycle - A.Y. 2019-2020, at Università Campus Bio-Medico di Roma.

Università Campus Bio-Medico di Roma, Via Álvaro del Portillo, 21, 00128, Rome (RM), Italy

Jan 2019 – Feb 2023 **Collaboration contracts**

Research collaboration with the Advanced Robotics and Human-Centred Technologies (CREO Lab) on the following research projects:

Nov 2022 – Feb 2023 **ODIN**: Leveraging AI based technology to transform the future of health care delivery in Leading Hospitals in Europe

Sep 2019 – Oct 2019 **SENSE-RISC**: Development of instrumented suits for prevention and mitigation of workers' safety risks

Jul 2019 – Aug 2019 **SAFE-MOVER**: User-centred design of a robotic device for improving working conditions and user subjective perspective during patient-handling movements

Feb 2019 – Jun 2019 **RehabRobo@work**: Bio-cooperative robotic system for upper-limb rehabilitation in working environments

Jan 2019 **SIRASI**: Robotic system for upper and lower limb rehabilitation

Università Campus Bio-Medico di Roma, Via Álvaro del Portillo, 21, 00128, Rome (RM), Italy

## FOREIGN EXPERIENCES

Jun 2022 – Nov 2022 **Visiting student**

– Participation at the Kuka Innovation Award 2022 with the "SAFER" Team, video at .
– *Role*: development of user state estimation algorithms to predict the active level of participation of healthy subjects undergoing robot-aided rehabilitation sessions.
– Supervisor: Prof. Bram Vanderborght.

Vrije Universiteit Brussel, Bd de la Plaine, 2, 1050, Brussel (BRU), Belgium

## EDUCATIONAL ACTIVITIES

Lecturer

*"Cyber Physical-Robotics"*, 2nd year, MSc in Intelligent Systems Engineering

– A.Y. 23/24 2/9 CFU

Università Campus Bio-Medico di Roma, Via Álvaro del Portillo, 21, 00128, Rome (RM), Italy

*"Python, Basic programming tools (Anaconda, Colab)"*, Advanced School in Artificial Intelligence, ISTC - CNR since the 7th edition

ISTC Roma 1 (sede centrale) Via Giandomenico Romagnosi 18a, 00196, Roma (RM), Italy

*"AI Lab: ML vs deep network for motion perception"*, Advanced School in Artificial Intelligence, ISTC - CNR since the 2nd edition

ISTC Roma 1 (sede centrale) Via Giandomenico Romagnosi 18a, 00196, Roma (RM), Italy

Modulo didattico di "Programmazione e Controllo di Robot" nell'ambito del Corso "Tecnico Superiore per l'automazione ed i Sistemi meccatronici Specialista per la transizione Digitale dell'industria Chimico-Farmaceutica" presso la Fondazione ITS Meccatronico del Lazio

Fondazione ITS Meccatronico del Lazio, Via del Plebiscito, 15, 03100, Frosinone (FR), Italy

Teaching assistant

*"Industrial and Medical Robotics"*, 1st year, MSc in Biomedical Engineering

– A.Y. 25/26, 5/15 CFU
– A.Y. 24/25, 5/15 CFU
– A.Y. 23/24, 8/15 CFU
– A.Y. 22/23, 7.5/15 CFU
– A.Y. 21/22, 7.5/15 CFU
– A.Y. 20/21, 6/15 CFU
– A.Y. 19/20, 3/15 CFU

*"Bioengineering and biomechanics of Human Motions"*, 2nd year, MSc in Biomedical Engineering

– A.Y. 23/24, 4/6 CFU
– A.Y. 22/23, 5/6 CFU
– A.Y. 21/22, 5/6 CFU
– A.Y. 20/21, 3/6 CFU

Università Campus Bio-Medico di Roma, Via Álvaro del Portillo, 21, 00128, Rome (RM), Italy

Other

– Co-supervisor of:
  2 Ph.D. enrolled in the National PhD in Artificial Intelligence, XXXVIII-bis cycle, course on Health and life sciences, organized by Università Campus Bio-Medico di Roma
  14 Bachelor theses in Industrial Engineering at Università Campus Bio-Medico di Roma, Rome, Italy.
  13 Master theses in Biomedical Engineering at Università Campus Bio-Medico di Roma, Rome, Italy.
  1 Master theses in Computer Science at Università Federico II di Napoli, Naples, Italy.
– Personal Tutoring Activity: supporting 1st and 2nd year industrial engineering students in managing their University experience at Università Campus Bio-Medico di Roma, Rome, Italy.

## SKILLS AND COMPETENCES

### Technical Skills

- Robot interfacing, planning, and control utilizing ROS system (Python and C++) and KUKA Sunrise.OS (Java) for various robotic platforms, including Kuka LWR 4+, Kuka LBR Med, and TIAGo.
- Proficient in developing algorithms for computer vision applications, including emotion estimation from facial expressions, kinematic analysis from skeleton data obtained through sensors like Kinect One or RGB cameras with MediaPipe.
- Expertise in designing and implementing strategies for estimating the state of individuals to close the control loop of robots based on the person's condition.
- Development of algorithms for interfacing with sensors, data management, storage, and post-processing, employing programming languages such as MATLAB, Python, and C#.
- Development of Virtual Reality environments using Unity (C#).
- Application of Machine Learning algorithms for real-time classification, with proficiency in both MATLAB and Python.

## Soft Skills

- **Teaching:** Experience instructing students through engaging lessons.
- **Keenly Curious**: Exhibits a keen curiosity, consistently seeking to broaden knowledge and explore new concepts.
- **Problem-Solving:** Demonstrated ability to tackle complex challenges through critical analysis and finding innovative solutions.
- **Team Working:** Effective collaboration with colleagues during academic and professional projects.
- **Motivation:** Ability to inspire and motivate others towards goal achievement.
- **Flexibility:** Adaptation to changing needs and priorities in a dynamic environment.
- **Perseverance:** Unwavering commitment and persistence in overcoming obstacles and challenges.
- **Cross-functional communication:** Demonstrated proficiency in effectively communicating with professionals spanning diverse fields, including clinical staff such as surgeons, doctors, and physiotherapists, as well as technical experts and end-users of the technology (i.e., patients).

## Languages

Mother tongue: Italian

| Other languages | UNDERSTANDING | | SPEAKING | | WRITING |
|---|---|---|---|---|---|
| | Listening | Reading | Spoken interaction | Spoken production | |
| English | B2 | B2 | B2 | B2 | B2 |

## JOURNAL AND CONFERENCE SERVICE

Editorial Roles: Review Editor on the Editorial Board of Biomedical Robotics, specialty section of Frontiers in Robotics and AI.

Guest Editor of Special Issue: Topic Coordinator of the Research Topic on *Advancements in AI-driven Multimodal Interfaces for Robot-Aided Rehabilitation* on Frontiers on Robotics and AI, Frontiers on Big Data, and Frontiers on Artificial Intelligence Journals.

Guest Editor of the Special Issue on *Artificial Intelligence and Intelligent Robots: Challenges and Opportunities* on Applied Sciences MDPI.

| | |
|---|---|
| Conference Chair Roles | Member of the Organizing Committee of the *Robotics and Emerging Technologies in Rehabilitation: The Robot as a Tool for Both Assessment and Personalized Intervention* workshop held in conjunction with the I-RIM 2025 conference.<br>Member of the Organizing Committee of the *Workshop on Social Robotics for Human-Centered Assistive and Rehabilitation AI* held in conjunction with the ICSR 2025 international conference.<br>Program Chair of the *Workshop on Advanced AI Methods and Interfaces for Human-Centered Assistive and Rehabilitation Robotics (a Fit4MedRob event) - AIxIA 2024*<br>Program Chair of the *ALTRUIST 4th Workshop on "sociAL roboTs for peRsonalized, continUous and adaptIve aSsisTance"*<br>Program Chair of the *AIxIA 2024 (23rd International Conference of the Italian Association for Artificial Intelligence)*<br>Travel Grant Chair of the *AIxIA 2024 (23rd International Conference of the Italian Association for Artificial Intelligence)*<br>Member of the Local Organizing Committee of the *Sixth Italian Conference on Robotics and Intelligent Machines* |
| Reviewer for International Journals | IEEE Transaction on Human-Machine Systems, IEEE Sensors Journal, IEEE Robotics and Automation Letters, IEEE Transactions on Vehicular Technology, IEEE Transactions on Medical Robotics and Bionics, IEEE Access, IEEE Transaction on Haptics, Frontiers in Neurorobotics, Frontiers in Robotics and AI, Frontiers in Computer Science, Applied Bionics and Biomechanics, International Journal of Advanced Robotic Systems, Prosthetics and Orthotics International, Computer Methods in Biomechanics and Biomedical Engineering, Scientific Reports, SN Applied Sciences, Disability and Rehabilitation: Assistive Technology, MDPI Future Internet, MDPI Life, MDPI Robotics, MDPI Electronics, MDPI Machines, MDPI Applied Sciences, MDPI Clocks & Sleep, MDPI Sensors, MDPI Multimodal Technologies and Interaction, MDPI Algorithms, MDPI Actuators, MDPI Mathematics, MDPI Journal of Low Power Electronics, MDPI Applications, MDPI International Journal of Environmental Research and Public Health, MDPI Healthcare, MDPI Aerospace |
| Reviewer for International Conferences | IEEE International Conference on Robotics and Automation, IEEE International Conference on Robot & Human Interactive Communication, IEEE International Symposium on Safety, Security, and Rescue Robotics, Sensors and Application Conference 2020, IEEE International Workshop On Metrology for Industry 4.0 & IoT, International Conference of the IEEE Engineering in Medicine and Biology Society |
| Reviewer for National Conferences | Congresso Nazionale di Bioingegneria (GNB), Italian Conference on Robotics and Intelligent Machines (I-RIM). |
| Member of Scientific Societies | – Member of the IEEE, IEEE Robotics and Automation Society, since 2019<br>– National Group of Bioengineering (GNB), since 2019<br>– Istituto di Robotica e Macchine Intelligenti (I-RIM), 2020<br>– Associazione Italiana per l'Intelligenza Artificiale (AIxIA), since 2024 |

## ATTENDED CONFERENCES

Oral presentation at conference

- Oral presentation at the ICSR 25 conference of the paper "A Multimodal Emotion Recognition Approach for Socially Assistive Robots", 11/09/2025.
- Oral presentation at the IEEE RO-MAN 2025 conference of the paper "Enhancing Adaptive Robotic Coaches with Multimodal Workload Estimation", 26/08/2025.
- Oral presentation at the *Workshop on Advanced AI Methods and Interfaces for Human-Centered Assistive and Rehabilitation Robotics (a Fit4MedRob event)* held in parallel with the AIxIA 2024 conference of the paper "Leveraging Multimodal Monitoring in Plan-Based Robot-Aided Rehabilitation", 27/11/2024.
- Oral presentation at the main track of the AIxIA 2024 conference of the paper "REPAIR Platform: Robot-AidEd PersonAlIzed Rehabilitation", 27/11/2024.
- Speaker at the "Rehabilitative and Assistive Robotics Research in Italy: The Fit4Medical Robotics Initiative" Workshop, in the framework of the Sixth Italian Conference on Robotics and Intelligent Machines, "Fostering Behavior Change through Cognitive Social Robotics", 25/10/2024.
- Oral presentation at the ASIMOV workshop Adaptive Social Interaction and MOVement for assistive and rehabilitation robotics, in the framework of the ICSR international conference of the paper "Psychophysiological Assessment during Upper-Limb Robot-Aided Rehabilitation in Patients with Musculoskeletal Disorders", 12/11/2022.
- Oral presentation at the National Congress of the Italian Society of Ergonomics and Human Factors of the paper "Ergonomic evaluation of working gestures through an optoelectronic system", 04/05/2022.
- Oral presentation at the IROS conference of the paper "A robotic health-care assistant for COVID-19 emergency", 28/09/2021.
- Oral presentation at the GNB 2020 conference of the paper "A Dataset of DMPs for robot motion planning", 11/06/2021.
- Oral presentation at the IEEE MetroInd4.0&IoT conference of the paper "Analysis of Physiological Parameters and Workload during Working Tasks in COVID-19 Pandemic Conditions", 08/06/2021.
- Oral presentation at the I-RIM national conference of the papers "Combined use of DMP and real objects in robot-aided rehabilitation" and "A Robotic Assistant for Logistics and Disinfection in Health Centers", 11/12/2020.
- Oral presentation at the ICNR conference of the paper "A robot-aided rehabilitation platform for occupational therapy with real objects", 16/10/2020.
- Oral presentation at the BAILAR Behavior Adaptation, Interaction and Learning for Assistive Robotics workshop, in the framework of the IEEE RO-MAN international conference of the paper "A robot-aided rehabilitation system based on the combined use of Dynamic Motion Primitives and RGB-D camera", 03/09/2020.

Chair at conference

- Chair of the *"Medical Robots and Systems"* session at the IROS conference, 09/28/2021.

## BIBLIOMETRICS

**Scopus** – Documents: 45 Citations: 335 h-index: 12

**ResearchGate** – Documents: 60 Citations: 394 h-index: 12

**Google Scholar** – Documents: 59 Citations: 455 h-index: 13

## PROJECTS PARTICIPATION

**Fit4MedRob**: Fit for medical robotics: 44 mesi per rivoluzionare i modelli assistivi e riabilitativi (Project funded by the Italian Ministry of Research, under the complementary actions to the NRRP)

*Role*: design and development of intelligent rehabilitation robots for personalized treatment delivery, with a particular emphasis on reactive adaptation to the patient's state and long-term personalization.

**SPINE4.0**: Development of an innovative, multi-disciplinary and integrated approach for workers suffering from degenerative pathologies of the lumbar spine based on advanced technologies, capacity buildinging and feasibility analysis for the creation of a reference center for prevention, diagnosis, treatment and reintegration into work. (Project funded by National Institute for Insurance against Accidents at Work)

*Role*: Reproduction of working scenarios through a virtual reality system and mechatronic and sensory technologies to generate modular loads to assess patients and workers suffering from low back pain.

**ODIN**: Leveraging AI based technology to transform the future of health care delivery in Leading Hospitals in Europe (Project Founded by European Union's Horizon 2020 Research and Innovation Programme)

*Role*: Development and validation of vision systems for patient posture recognition for monitoring meal consumption and joint mobilization activity of upper and lower limbs.

**HeAL9000**: Healthcare Agents and Learning robots (Project Founded by Regione Lazio)

*Role*: Design of interaction modalities for a collaborative robot to provide patients with robot-aided rehabilitation treatment. I implemented a monitoring system to retrieve the complete user state regarding facial expression, psychophysiological state, and kinematics performance.

**EXPERIENCE**: Benchmarking Exoskeleton-Assisted Gait Based on Users' Subjective Perspective and Experience (Open Call of the EU-funded project EUROBENCH H2020 ICT-2016-2017-779963)

*Role*: Design of a methodology to assess psychophysiological indicators of patients during exoskeleton-assisted walking. A Fuzzy Logic approach estimating attention, stress, energy expenditure, and fatigue levels was designed and validated on healthy and pathological participants.

**SENSE-RISC**: Development of instrumented suits for prevention and mitigation of workers' safety risks (Project funded by National Institute for Insurance against Accidents at Work)

*Role*: Design and validation of classification and estimation models assessing the activity level and a multiparametric indicator of workers. Integration of the cloud architecture implemented to collect data from wearable sensors with the user state estimation software.

**TOTEM**: TOTal Ergonomic Measurement Platform (Project Horizon 2020 – PON 2014/2020)

*Role*: Validation of M-IMU sensors by using an anthropomorphic manipulator. The robotic arm was controlled to generate controlled motions to compute M-IMUs tracking accuracy.

**SAFE-MOVER**: User-centred design of a robotic device for improving working conditions and user subjective perspective during patient-handling movements (Bando University Strategic Projects, Topic: Healthcare 4.0)

*Role*: Biomechanical analysis of healthcare operators during patient-handling movements and patients' psychophysiological assessment.

**ARONA**: Surgical navigation assisted by advanced robotics (Project MIUR PON Research and Innovation 2014 – 2020)

*Role*: Validation of a hands-on approach for robot-aided pedicle screw fixation. Biomechanical evaluation of participants performing the robot-aided pedicle screw fixation in different tapping modalities.

**RehabRobo@work**: Bio-cooperative robotic system for upper-limb rehabilitation in working environments (Project funded by National Institute for Insurance against Accidents at Work)

*Role*: Integration of the bio-cooperative robotic platform. Development and validation of a patient-tailored control strategy for end-effector robots. Clinical validation of the platform on patients affected by musculoskeletal disorders.

**SIRASI**: Robotic system for upper and lower limb rehabilitation (Bando INTESE)

*Role*: Assembly of the modules making up the SIRASI platform and validation employing empty and load handling tests. The robotic platform was validated for both upper and lower limbs.

## AWARDS

2025 Finalist at the Most Promising Researcher in Robotics and Artificial Intelligence Award as part of the RomeCup 2025.

2024 Best Paper Award at the AIxIA 2024 conference held in Bolzen with the paper "REPAIR Platform: Robot-AidEd PersonAIlzed Rehabilitation"

2024 Supervisor of the winner of the Master Thesis Award Istituto di Biorobotica of Scuola Superiore Sant'Anna by Gruppo Nazionale di Bioingegneria (Gianmarco Cirelli) for *his excellent results obtained on the semiautonomous control strategy for a hand-wrist prosthesis based on computer vision*.

2020 First place in the sixth "Premio Qualità" competition organized by the Clinical Directorate of the University Hospital Università Campus Bio-Medico di Roma. The Award aimed at presenting and rewarding experiences that, by highlighting virtuous behavior, documented an improvement in quality through an organization of work that put the patient and the operator at the center of its work.

## JOURNAL PAPERS


[1] R. Billardello, **C. Tamantini**, F. Cordella, F. Scotto di Luzio, T. Varrecchia, G. Chini, F. Draicchio, A. Ranavolo, and L. Zollo. "Estimating workers' physical effort during isometric contractions through sEMG: the role of feature selection". In: *ACM Transactions on Human-Robot Interaction* (2025). DOI: 10.1145/3759159.

[2] O. Coser, **C. Tamantini**, M. Tortora, L. Furia, R. Sicilia, L. Zollo, and P. Soda. "Deep learning for human locomotion analysis in lower-limb exoskeletons: a comparative study". In: *Frontiers in Computer Science* 7 (2025). DOI: 10.3389/fcomp.2025.1597143.

[3] R. Molle, **C. Tamantini**, C. Lauretti, F. Cordella, F. Scotto Di Luzio, D. Sebastiani, F. Santacaterina, M. Bravi, F. Bressi, S. Miccinilli, and L. Zollo. "Exploring Priority Parameters in Physiotherapist Decision Models for Tailoring Robot-Aided Rehabilitation". In: *International Journal of Social Robotics* (2025). DOI: 10.1007/s12369-025-01309-3.

[4] R. Molle, **C. Tamantini**, C. Lauretti, F. Cordella, F. Scotto di Luzio, D. Sebastiani, F. Santacaterina, M. Bravi, F. Bressi, S. Miccinilli, and L. Zollo. "Exploring Priority Parameters in Physiotherapist Decision Models for Tailoring Robot-Aided Rehabilitation". In: *International Journal of Social Robotics* (2025). DOI: 10.1007/s12369-025-01309-3.

[5] R. Molle, **C. Tamantini**, C. Lauretti, E. M. Romano, and L. Zollo. "An online reinforcement learning method to improve control adaptability in robot-aided rehabilitation". In: *Engineering Applications of Artificial Intelligence* 161 (2025). DOI: 10.1016/j.engappai.2025.112248.

[6] F. Santacaterina, **C. Tamantini**, G. Camarro, S. Miccinilli, F. Bressi, L. Zollo, S. Sterzi, and M. Bravi. "Is Brazilian Jiu-Jitsu a Traumatic Sport? Survey on Italian Athletes' Rehabilitation and Return to Sport". In: *Journal of Functional Morphology and Kinesiology* 10.3 (2025). DOI: 10.3390/jfmk10030286.

[7] F. Scotto di Luzio, **C. Tamantini**, R. Di Maro, C. Carnazzo, S. Spada, F. Draicchio, and L. Zollo. "Biomechanical and physiological effects of passive upper limb exoskeletons in simulated manufacturing tasks". In: *Wearable Technologies* 6 (2025). DOI: 10.1017/wtc.2025.10021.

[8] **C. Tamantini**, M. L. Cristofanelli, F. Fracasso, A. Umbrico, G. Cortellessa, A. Orlandini, and F. Cordella. "Physiological Sensor Technologies in Workload Estimation: A Review". In: *IEEE Sensors Journal* 25.18 (2025), pp. 34298–34310. DOI: 10.1109/JSEN.2025.3597329.

[9] **C. Tamantini**, F. Marra, J. Di Tocco, S. Di Modica, A. Lanatà, F. Cordella, M. Ferrarin, F. Rizzo, M. Stefanelli, M. Papacchini, C. Delle Site, A. Tamburrano, C. Massaroni, E. Schena, L. Zollo, and M. S. Sarto. "SenseRisc: An instrumented smart shirt for risk prevention in the workplace". In: *Wearable Technologies* 6 (2025). DOI: 10.1017/wtc.2025.10.

[10] **C. Tamantini**, K. Patrice Langlois, D. R. Cianca, and L. Zollo. "Editorial: Advancements in AI-driven multimodal interfaces for robot-aided rehabilitation". In: *Frontiers in Robotics and AI* 12 (2025). DOI: 10.3389/frobt.2025.1605418.

[11] **C. Tamantini**, K. Patrice Langlois, J. de Winter, P. H. Ali Mohamadi, D. Beckwée, E. Swinnen, T. Verstraten, B. Vanderborght, and L. Zollo. "Promoting active participation in robot-aided rehabilitation via machine learning and impedance control". In: *Frontiers in Digital Health* 7 (2025). DOI: 10.3389/fdgth.2025.1559796.

[12] **C. Tamantini**, A. Umbrico, and A. Orlandini. "Automated planning and scheduling in robot-aided rehabilitation: a review". In: *Journal of NeuroEngineering and Rehabilitation* 22.1 (2025). DOI: 10.1186/s12984-025-01710-z.

[13] O. Coser, **C. Tamantini**, P. Soda, and L. Zollo. "AI-based methodologies for exoskeleton-assisted rehabilitation of the lower limb: a review". In: *Frontiers in Robotics and AI* 11 (2024). DOI: 10.3389/frobt.2024.1341580.

[14] C. Rondoni, F. Scotto di Luzio, **C. Tamantini**, N. L. Tagliamonte, M. Chiurazzi, G. Ciuti, and L. Zollo. “Navigation benchmarking for autonomous mobile robots in hospital environment”. In: *Scientific Reports* 14.1 (2024). DOI: 10.1038/s41598-024-69040-z.

[15] **C. Tamantini**, F. Cordella, F. Scotto di Luzio, C. Lauretti, B. Campagnola, F. Santacaterina, M. Bravi, F. Bressi, F. Draicchio, S. Miccinilli, and L. Zollo. “A fuzzy-logic approach for longitudinal assessment of patients’ psychophysiological state: an application to upper-limb orthopedic robot-aided rehabilitation”. In: *Journal of NeuroEngineering and Rehabilitation* 21.1 (2024). DOI: 10.1186/s12984-024-01501-y.

[16] **C. Tamantini**, F. Cordella, N. L. Tagliamonte, I. Pecoraro, I. Pisotta, A. Bigioni, F. Tamburella, M. Lorusso, M. Molinari, and L. Zollo. “A Data-Driven Fuzzy Logic Method for Psychophysiological Assessment: An Application to Exoskeleton-Assisted Walking”. In: *IEEE Transactions on Medical Robotics and Bionics* (2024), pp. 1–1. DOI: 10.1109/TMRB.2024.3377453.

[17] G. Cirelli, **C. Tamantini**, L. P. Cordella, and F. Cordella. “A Semiautonomous Control Strategy Based on Computer Vision for a Hand–Wrist Prosthesis”. In: *Robotics* 12.6 (2023). DOI: 10.3390/robotics12060152.

[18] R. Cittadini, **C. Tamantini**, F. Scotto di Luzio, C. Lauretti, L. Zollo, and F. Cordella. “Affective state estimation based on Russell’s model and physiological measurements”. In: *Scientific Reports* 13.1 (2023). DOI: 10.1038/s41598-023-36915-6.

[19] C. Lauretti, **C. Tamantini**, H. Tomè, and L. Zollo. “Robot Learning by Demonstration with Dynamic Parameterization of the Orientation: An Application to Agricultural Activities”. In: *Robotics* 12.6 (2023). DOI: 10.3390/robotics12060166.

[20] C. Lauretti, **C. Tamantini**, and L. Zollo. “A new DMP scaling method for robot learning by demonstration and application to the agricultural domain”. In: *IEEE Access* (2023), pp. 1–1. DOI: 10.1109/ACCESS.2023.3349093.

[21] **C. Tamantini**, F. Cordella, C. Lauretti, F. Scotto di Luzio, B. Campagnola, L. Cricenti, M. Bravi, F. Bressi, F. Draicchio, S. Sterzi, and L. Zollo. “Tailoring Upper-Limb Robot-Aided Orthopedic Rehabilitation on Patients’ Psychophysiological State”. In: *IEEE Transactions on Neural Systems and Rehabilitation Engineering* 31 (2023), pp. 3297–3306. DOI: 10.1109/TNSRE.2023.3298381.

[22] **C. Tamantini**, F. Scotto di Luzio, C. Daniel Hromei, L. Cristofori, D. Croce, M. Cammisa, A. Cristofaro, M. V. Marabello, R. Basili, and L. Zollo. “Integrating Physical and Cognitive Interaction Capabilities in a Robot-Aided Rehabilitation Platform”. In: *IEEE Systems Journal* (2023), pp. 1–12. DOI: 10.1109/JSYST.2023.3317504.

[23] **C. Tamantini**, C. Rondoni, F. Cordella, E. Guglielmelli, and L. Zollo. “A Classification Method for Workers’ Physical Risk”. In: *Sensors* 23.3 (2023). DOI: 10.3390/s23031575.

[24] J. M. Vicente-Samper, **C. Tamantini**, E. Ávila-Navarro, M. A. De La Casa-Lillo, L. Zollo, J. M. Sabater-Navarro, and F. Cordella. “An ML-Based Approach to Reconstruct Heart Rate from PPG in Presence of Motion Artifacts”. In: *Biosensors* 13.7 (2023). DOI: 10.3390/bios13070718.

[25] M. Lapresa, **C. Tamantini**, F. Scotto Di Luzio, M. Ferlazzo, G. Sorrenti, F. Corpina, and L. Zollo. “Validation of Magneto-Inertial Measurement Units for Upper-Limb Motion Analysis Through an Anthropomorphic Robot”. In: *IEEE Sensors Journal* 22.17 (2022), pp. 16920–16928. DOI: 10.1109/JSEN.2022.3193313.

[26] **C. Tamantini**, F. Cordella, C. Lauretti, and L. Zollo. “The WGD—A dataset of assembly line working gestures for ergonomic analysis and work-related injuries prevention”. In: *Sensors* 21.22 (2021). DOI: 10.3390/s21227600.

[27] **C. Tamantini**, F. Scotto Di Luzio, F. Cordella, G. Pascarella, F. E. Agro, and L. Zollo. “A Robotic Health-Care Assistant for COVID-19 Emergency: A Proposed Solution for Logistics and Disinfection in a Hospital Environment”. In: *IEEE Robotics and Automation Magazine* 28.1 (2021), pp. 71–81. DOI: 10.1109/MRA.2020.3044953.

[28] C. Lauretti, F. Cordella, **C. Tamantini**, C. Gentile, F. Scotto Di Luzio, and L. Zollo. “A Surgeon-Robot Shared Control for Ergonomic Pedicle Screw Fixation”. In: *IEEE Robotics and Automation Letters* 5.2 (2020), pp. 2554–2561. DOI: 10.1109/LRA.2020.2972892.

## CONFERENCE PAPERS

[1] G. Beraldo, **C. Tamantini**, A. Umbrico, and A Orlandini. “Personalizing Behavior Change Intervention with Cognitive Robotics: Stage Detection & Goal Reasoning”. In: *Workshop on Advanced AI Methods and Interfaces for Human-Centered Assistive and Rehabilitation Robotics 2024 co-located with 23rd International Conference of the Italian Association for Artificial Intelligence (AIxIA 2024)*. 2025.

[2] G. Cirelli, **C. Tamantini**, L. P. Cordella, and F. Cordella. “AI-based Semiautonomous Control Strategy for upper-limb prostheses”. In: *11th Italian Workshop on Artificial Intelligence and Robotics co-located with the 23rd International Conference of the Italian Association for Artificial Intelligence (AIxIA 2024)*. 2025.

[3] R. Molle, **C. Tamantini**, C. Lauretti, F. Cordella, F. Scotto di Luzio, D. Sebastiani, F. Santacaterina, M. Bravi, F. Bressi, S. Miccinilli, and L. Zollo. “Assessing the "Rule of 10" in Orthopedic Robot-Aided Rehabilitation for Tailoring Exercise Dose”. In: *Workshop on Advanced AI Methods and Interfaces for Human-Centered Assistive and Rehabilitation Robotics 2024 co-located with 23rd International Conference of the Italian Association for Artificial Intelligence (AIxIA 2024)*. 2025.

[4] R. Molle, **C. Tamantini**, F. Taffoni, A. Caroppo, A. Manni, P.A. Siciliano, L. Zollo, and A. Leone. “Validating ViSCOPE: Vital Signs Contactless Estimation Pipeline for Robot-Aided Rehabilitation”. In: *Workshop on Advanced AI Methods and Interfaces for Human-Centered Assistive and Rehabilitation Robotics 2024 co-located with 23rd International Conference of the Italian Association for Artificial Intelligence (AIxIA 2024)*. 2025.

[5] **C. Tamantini**, A. Umbrico, and A Orlandini. “Leveraging Multimodal Monitoring in Plan-Based Robot-Aided Rehabilitation”. In: *Workshop on Advanced AI Methods and Interfaces for Human-Centered Assistive and Rehabilitation Robotics 2024 co-located with 23rd International Conference of the Italian Association for Artificial Intelligence (AIxIA 2024)*. 2025.

[6] **C. Tamantini**, A. Umbrico, and A. Orlandini. “REPAIR Platform: Robot-AidEd PersonAlIzed Rehabilitation”. In: vol. 15450 Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics). Cited by: 0. 2025, pp. 301–314. DOI: 10.1007/978-3-031-80607-0_23.

[7] F. Aksu, A. Bria, A. N. Caragliano, C. M. Caruso, W. Chen, E. Cordelli, O. Coser, A. Francesconi, L. Furia, V. Guarrasi, G. Iannello, C. Lauretti, G. Manni, G. Marino, D. Paolo, P. Ruffini, L. Shen, R. Sicilia, P. Soda, **C. Tamantini**, M. Tortora, Z. Wu, and L. Zollo. “Towards AI-driven Next Generation Personalized Healthcare and Well-being”. In: *Ital-IA*. 2024.

[8] G. Beraldo, **C. Tamantini**, A. Umbrico, and A Orlandini. “Fostering Behavior Change through Cognitive Social Robotics”. In: *16th International Conference, ICSR + AI 2024, Odense, Denmark, October 23–26*. 2024.

[9] C. Lauretti, **C. Tamantini**, A. Zompanti, S. Cimini, L. De Gara, M. Santonico, and L. Zollo. “An Intelligent Robotic Platform for Fruit Selective Harvesting”. In: *European Robotics Forum 2024*. Ed. by Cristian Secchi and Lorenzo Marconi. Cham: Springer Nature Switzerland, 2024, pp. 252–257. ISBN: 978-3-031-76424-0.

[10] R. Molle, **C. Tamantini**, A. Paglialonga, D. Simeone, L. Furia, M. Tortora, C. Lauretti, G. Iannello, P. Soda, R. Sicilia, et al. “AI-CARE: Artificial Intelligence for Customized Adaptive Robot-Aided Rehabilitation”. In: *International Workshop on Human-Friendly Robotics*. Springer. 2024, pp. 168–181.

[11] F. Scotto di Luzio, **C. Tamantini**, G. Boutaib, C. Carnazzo, S. Spada, and L. Zollo. “Kinematic and Muscular Assessment of an Active Hand Exoskeleton for Industrial Applications”. In: *European Robotics Forum 2024*. Ed. by Cristian Secchi and Lorenzo Marconi. Cham: Springer Nature Switzerland, 2024, pp. 3–7. ISBN: 978-3-031-76428-8.

[12] I. Pecoraro, N.L. Tagliamonte, **C. Tamantini**, F. Cordella, F. Bentivoglio, I. Pisotta, A. Bigioni, F. Tamburella, M. Lorusso, P. Argentieri, M. Molinari, and L. Zollo. “Psychophysiological Assessment of Exoskeleton-Assisted Treadmill Walking”. In: *Biosystems and Biorobotics*. Vol. 28. 2022, pp. 201–205. DOI: 10.1007/978-3-030-70316-5_33.

[13] **C. Tamantini**, F. Cordella, C. Lauretti, F. Scotto Di Luzio, M. Bravi, F. Bressi, F. Draicchio, S. Sterzi, and L. Zollo. “Patient-tailored Adaptive Control for Robot-aided Orthopaedic Rehabilitation”. In: *Proceedings - IEEE International Conference on Robotics and Automation*. 2022, pp. 5434–5440. DOI: 10.1109/ICRA46639.2022.9811791.

[14] **C. Tamantini**, M. Lapresa, F. Cordella, F. Scotto di Luzio, C. Lauretti, and L. Zollo. “A Robot-Aided Rehabilitation Platform for Occupational Therapy with Real Objects”. In: *Biosystems and Biorobotics*. Vol. 28. 2022, pp. 851–855. DOI: 10.1007/978-3-030-70316-5_136.

[15] L. Cristofori, C. D. Hromei, F. Scotto Di Luzio, **C. Tamantini**, F. Cordella, D. Croce, L. Zollo, and R. Basili. "HeAL9000: An Intelligent Rehabilitation Robot". In: *CEUR Workshop Proceedings*. Vol. 3060. 2021, pp. 29–41.

[16] **C. Tamantini**, M. Lapresa, F. Scotto Di Luzio, F. Cordella, and L. Zollo. "Analysis of physiological parameters and workload during working tasks in COVID-19 pandemic conditions". In: *2021 IEEE International Workshop on Metrology for Industry 4.0 and IoT, MetroInd 4.0 and IoT 2021 - Proceedings*. 2021, pp. 423–428. DOI: 10.1109/MetroInd4.0IoT51437.2021.9488444.

[17] A. Lanata, A. Greco, S. Di Modica, F. Niccolini, F. Vivaldi, F. Di Francesco, **C. Tamantini**, F. Cordella, L. Zollo, M. Di Rienzo, C. Massaroni, E. Schena, M. Di Sarto, and E. P. Scilingo. "A New Smart-Fabric based Body Area Sensor Network for Work Risk Assessment". In: *2020 IEEE International Workshop on Metrology for Industry 4.0 and IoT, MetroInd 4.0 and IoT 2020 - Proceedings*. 2020, pp. 187–190. DOI: 10.1109/MetroInd4.0IoT48571.2020.9138273.

[18] M. Lapresa, **C. Tamantini**, F. Scotto Di Luzio, F. Cordella, M. Bravi, S. Miccinilli, and L. Zollo. "A Smart Solution for Proprioceptive Rehabilitation through M-IMU Sensors". In: *2020 IEEE International Workshop on Metrology for Industry 4.0 and IoT, MetroInd 4.0 and IoT 2020 - Proceedings*. 2020, pp. 591–595. DOI: 10.1109/MetroInd4.0IoT48571.2020.9138193.

[19] **C. Tamantini**, C. Lauretti, F. Cordella, and L. Zollo. "A Dataset of DMPs for robot motion planning". In: *Convegno Nazionale di Bioingegneria*. 2020, pp. 202–205.

## WORKSHOP PAPERS

[1] G. Beraldo, **C. Tamantini**, A. Umbrico, and A. Orlandini. *A Dual-Process Cognitive Architecture for Tailored Behavior Change Interventions*. 6ª Conferenza Italiana di Robotica e Macchine Intelligenti, I-RIM 2024, 2024.

[2] G. Cirelli, **C. Tamantini**, E. Stefanelli, R. Billardello, L. Zollo, L.P. Cordella, and F. Cordella. *Usability and Performance Assessment of Semiautonomous Hand-Wrist Prosthetic Control*. 6ª Conferenza Italiana di Robotica e Macchine Intelligenti, I-RIM 2024, 2024.

[3] R. Molle, **C. Tamantini**, C. Lauretti, E.M. Romano, and L. Zollo. *Adapting Interaction Control in Robot-Aided Rehabilitation Using Reinforcement Learning*. 6ª Conferenza Italiana di Robotica e Macchine Intelligenti, I-RIM 2024, 2024.

[4] R. Molle, L. Zollo, and **C. Tamantini**. *Empowering Upper-Limb Robot-Aided Rehabilitation with Artificial Intelligence*. Vol. 18. 1. Proceedings of the MEi: CogSci Conference, 2024.

[5] C. Rondoni, F. Scotto di Luzio, **C. Tamantini**, N.L. Tagliamonte, M. Chiurazzi, G. Ciuti, and L. Zollo. *Assessing Robot Navigation in Healthcare: A New Benchmarking Approach for Dynamic Environments*. 6ª Conferenza Italiana di Robotica e Macchine Intelligenti, I-RIM 2024, 2024.

[6] **C. Tamantini**, A. Umbrico, and A. Orlandini. *An Automated Planning Approach for Personalized Robot-Aided Rehabilitation Sessions*. 6ª Conferenza Italiana di Robotica e Macchine Intelligenti, I-RIM 2024, 2024.

[7] R. Billardello, **C. Tamantini**, F. Scotto di Luzio, F. Cordella, Fabrizio Russo, G. Papalia, G. Vadalà, and L. Zollo. *Quantifying muscular activity during Back Performance Scale tasks*. XXI Congresso della Società Italiana di Analisi del Movimento in Clinica, 2023.

[8] C. Lauretti, **C. Tamantini**, A. Zompanti, S. Cimini, L. De Gara, M. Santonico, and L. Zollo. *A bio-inspired robotic platform for selective harvesting*. Living Machines, 2023.

[9] C. Lauretti, **C. Tamantini**, A. Zompanti, S. Cimini, L. De Gara, M. Santonico, and L. Zollo. *A learning-by-demonstration approach for fruit robot-based selective harvesting*. 5ª Conferenza Italiana di Robotica e Macchine Intelligenti, I-RIM 2023, 2023.

[10] T. Varrecchia, G. Chini, S. di Fonzo, R. Billardello, **C. Tamantini**, F. Cordella, F. Scotto di Luzio, L. Zollo, L. Fiori, A. Tatarelli, A. Silvetti, M. Serrao, F. Draicchio, and A. Ranavolo. *Evaluation of a passive upper limb exoskeleton using high-density surface electromyography*. XXI Congresso della Società Italiana di Analisi del Movimento in Clinica, 2023.

[11] F. Bressi, Dorotea Manco, S. Miccinilli, M. Bravi, L. Cricenti, B. Campagnola, F. Santacaterina, **C. Tamantini**, F. Scotto di Luzio, F. Cordella, et al. *Sviluppo e validazione di un sistema robotico bio-cooperativo per la riabilitazione ed il reinserimento in contesti lavorativi di soggetti affetti da patologia muscolo-scheletrica acuta del distretto di spalla*. Giornale italiano di Medicina Riabilitativa, 2021.

[12] F. Cordella, **C. Tamantini**, F. Scotto di Luzio, B. Albanesi, B. Campagnola, M. Bravi, M. Piredda, F. Bressi, M. G. De Marinis, and L. Zollo. *Kinematic analysis of healthcare workers during patient-handling*. XXI Congresso della Società Italiana di Analisi del Movimento in Clinica, 2021.

[13] C. Lauretti, F. Cordella, **C. Tamantini**, C. Gentile, F. Scotto di Luzio, and L. Zollo. *Robot-assisted Procedure for Pedicle Screw Fixation*. 3ª Conferenza Italiana di Robotica e Macchine Intelligenti, I-RIM 2021, 2021.

[14] F. Scotto di Luzio, **C. Tamantini**, F. Cordella, C. D. Hromei, L. Cristofori, D. Croce, and L. Basili R. Zollo. *HeAL9000: an Intelligent Rehabilitation Robot for Physical and Cognitive Interaction*. 3ª Conferenza Italiana di Robotica e Macchine Intelligenti, I-RIM 2021, 2021.

[15] **C. Tamantini**, F. Cordella, F. Scotto di Luzio, and L. Zollo. *Psychophysiological Assessment during Upper-Limb Robot-Aided Rehabilitation in Patients with Musculoskeletal Disorders*. ASIMOV2021: Workshop on Adaptive Social Interaction, MOVement for assistive, and rehabilitation robotics, 2021.

[16] I. Pecoraro, N. L. Tagliamonte, **C. Tamantini**, F. Cordella, F. Bentivoglio, I. Pisotta, A. Bigioni, F. Tamburella, M. Lorusso, P. Argentieri, M. Molinari, and L. Zollo. *Assessment of the psychophysiological state during walking with a treadmill-based exoskeleton*. 2ª Conferenza Italiana di Robotica e Macchine Intelligenti, I-RIM 2020, 2020.

[17] F. Scotto di Luzio, **C. Tamantini**, G. Boutaib, C. Carnazzo, S. Spada, and L. Zollo. *A Preliminary Ergonomic Evaluation of an Active Hand Exoskeleton for Manufacturing Applications*. XII Congresso nazionale società italiana di ergonomia e fattori umani – SIE2022, 2020.

[18] **C. Tamantini**, F. Cordella, F. Scotto di Luzio, C. Lauretti, F. Draicchio, and L. Zollo. *An Ergonomic Evaluation of Working Gestures by means of Optoelectronic Systems*. XII Congresso nazionale società italiana di ergonomia e fattori umani – SIE2022, 2020.

[19] **C. Tamantini**, M. Lapresa, F. Cordella, F. Scotto di Luzio, C. Lauretti, and L. Zollo. *Combined use of DMP and real objects in robot-aided rehabilitation*. 2ª Conferenza Italiana di Robotica e Macchine Intelligenti, I-RIM 2020, 2020.

[20] **C. Tamantini**, M. Lapresa, F. Cordella, F. Scotto di Luzio, C. Lauretti, and L. Zollo. *A robot-aided rehabilitation system based on the combined use of Dynamic Motion Primitives and RGB-D camera*. Workshop on Behaviors Adaptation, Interaction and Learning for Assistive Robotics, ROMAN 2020, 2020.

[21] **C. Tamantini**, F. Scotto di Luzio, F. Cordella, M. Lapresa, G. Pascarella, F. E. Agrò, and L. Zollo. *A Robotic Assistant for Logistics and Disinfection in Health Centers*. 2ª Conferenza Italiana di Robotica e Macchine Intelligenti, I-RIM 2020, 2020.

## BOOK CHAPTERS

[1] C. Lauretti, F. Scotto Di Luzio, A. Demofonti, **C. Tamantini**, F. Cordella, N. L. Tagliamonte, and L. Zollo. “Towards Human-Centric, Sustainable, and Resilient Robot Technologies”. In: *Healthcare in the Digital Age: Perspectives for Sustainable Innovation and Assessment*. Springer, 2025, pp. 57–87.

In compliance with the GDPR and the Italian Legislative Decree no. 196 dated 30/06/2003, I hereby authorize you to use and process my personal details contained in this document