Eng., Ph.D. Loris Roveda **Curriculum vitae**

General Informations

Date of Birth: 11th July 1986
Place of Birth: 21052 Busto Arsizio (VA), Italy
Citizenship: Italian
Address: via Ronchetto 7, 6900 Lugano (Ticino), Switzerland
Mobile: +39-331-864-8725
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loris.roveda@pec.it
https://www.researchgate.net/profile/Loris_Roveda

Qualifications and Interests

Robotics, control theory, robot-environment interaction modeling and control, human-robot interaction, artificial intelligence, machine learning, optimization, dynamics identification and modeling, signal analysis.

Foreign Languages

English (TOEIC exam)

Software Skills

C, C ++, Python, ROS, Matlab, CAD, Windows, Linux

Current Employment

IDSIA USI-SUPSI (Istituto Dalle Molle di Studi sull'Intelligenza Artificiale), Lugano, Switzerland:

- February 01, 2019 - Present
- **Senior Permanent Researcher** on optimization techniques, machine learning and artificial intelligence, design and control of collaborative robotics and exoskeletons, Industry 4.0
- Key topics covered: exoskeleton and cooperative robots design and control, interaction control, impedance control, human-robot interaction, industrial applications (assembly, disassembly), machine learning and AI applied to control, optimization techniques for process control

Professional & External Activities

- world's **top 2%** researchers 2023 (Stanford University's ranking) in engineering and AI
- **Italian ASN**: associate professor qualification (obtained on February 06 2023)
- **Committee Member** for the CEN/WS 110
  PERFORMANCE TEST METHOD FOR LOWER LIMB WEARABLE ROBOTS FOR WALKING ON IRREGULAR TERRAINS
- **Associate Editor** of International Journal of Robotics Research, Sage (from 01-2023)
- **Associate Editor** for ICRA 2024
- **Associate Editor** for BioRob 2024
- **Associate Editor** of Signal, Image and Video Processing, Springer (from 07-2022)
- **Associate Editor** of MDPI Electronics, Artificial Intelligence Section (from 05-2023)
- **Associate Editor** of Wiley Asian Journal of Control (from 01-2022)
- **Associate Editor** of Complex Engineering Systems Journal (from 05-2021)
- **Associate Editor** of MDPI Designs Journal (from 09-2020)
  (`https://www.mdpi.com/journal/designs/editors`)
- **Associate Editor** of Taylor and Francis Cyber-Physical Systems Journal (from 11-2021

to 12-2023)
(https://comengsys.com/editorsChief/index)
- Topic board member for the jounal MDPI Robotics
(https://www.mdpi.com/journal/robotics/topical_advisory_panel)
- IEEE CASE 2024 Special Session "Innovations in Robotics and Automation for Enhanced Healthcare"
- DSA ISC 2024 Special Session "Decision Science in Manufacturing"
- Involved in the **COST Action CA16116**: Wearable Robots for Augmentation, Assistance or Substitution of Human Motor Functions
- SIDRA (Società Italiana Docenti e Ricercatori in Automatica) member
- I-RIM (Istituto di Robotica e Macchine Intelligenti) member
- Program committee member of AAAI 2023 conference
- Member of the international scientific committee of CIRP CMS 2022 conference
- Organization committee member of GMROBOT2022 conference
- Member of the international scientific committee of ARCI 2022 conference
- Member of the international scientific committee of ARCI 2021 conference
- Member of the international scientific committee of JCRAI 2020 conference
- Member of the international scientific committee of KEOD 2020 conference
- Member of the international scientific committee of KEOD 2019 conference
- Member of the international scientific committee of COGNITIVE 2019 conference
- Member of the international scientific committee of COGNITIVE 2018 conference
- Chair of the IROS 21 Session "Optimization and Optimal Control I"
- Chair and Coordinator of the special session on Assisting Humans through Robotics in Industry 4.0 @ COGNITIVE 2018
- Member of the international scientific committee of MTD2017 conference
- IEEE Member
- Peer Reviewer: Transactions on Mechatronics, Mathematical Problems in Engineering, ICAE, TRO, RCIM, RAL, etc., main robotics conferences (IROS, ICRA, CASE, ICORR, etc.)
- Chair of robotics control session @ ICINCO 2014

Previous Employments

STIIMA - CNR (Institute of Intelligent Industrial Technologies and Systems for Advanced Manufacturing - National Research Council), Milano, Italy:

- January 08, 2015 - January 31, 2019
- III Level Researcher
- P.I. for empowering devices (exoskeleton and cooeprative robot) design and control
- **Responsable** of "Laboratory of Robotic Prototype Development"
- **Responsable** of research on collaborative robotics and industrial exoskeleton development
- Key topics covered: exoskeleton and cooperative robots design and control, interaction control, impedance control, human-robot interaction, industrial applications (assembly, disassembly), KUKA iiwa, KUKA LWR 4+, UR10 robot (torque control, dynamics, impedance control)

ITIA-CNR/STIIMA - CNR (Institute of Industrial Technologies and Automation - National Research Council), Milano, Italy:

- Associated with ITIA-CNR during the Ph.D.

Miramondi Impianti S.P.A., Abbiategrasso (MI), Italy:

- September 2010 - March 2011
- Area of Work: assistant production director

- Activities: managing staff and workload, participation in the design of production lines, supervising testing line, quality assurance

Carlo Banfi S.P.A., Rescaldina (MI), Italy:

- March 2009 - June 2009
- Area of Work: mechanical design
- Activities: analyze and find solutions to the problems of imbalance and vibrations resulting from the adoption of direct transmission of turbines mounted on blasting machines

Education

University Education: **Politecnico di Milano**, 20156 Milano (MI), Italy

Ph.D., Mechanical Engineering, January 2012 - December 2014, Degree: **Ph.D. with honors**

- Thesis Title: Model Based Compliance Shaping Control of Light-Weight Manipulator in Hard-Contact Industrial Applications
  https://www.politesi.polimi.it/handle/10589/109742
- Area of Study: robotics/dynamics of mechanical systems and automation
- Ph.D. in conjunction with **Politecnico di Milano** and **ITIA - CNR** (Institute of Industrial Technologies and Automation - National Research Council)
- International Examiner: **Dr. Christian Ott** from **DLR** (German Aerospace Center)
- Key topics covered: robotic applications for the manufacturing industry using KUKA LWR 4+, robot-environment interaction modeling, estimation and control, closed-loop stability, definition of the experimental set-up for dynamic identification and control strategies testing, data acquisition and analysis

MSc, Mechanical Engineering, September 2009 - December 2011, Degree: **107/110**

- Thesis Title: Modeling and testing of an adaptive impedance control strategy for industrial manipulators
- Area of Study: robotics and mechatronics
- Key topics covered: modeling and testing phase carried out on Kuka LWR 4+

BSc, Mechanical Engineering, September 2005 - July 2009, Degree: **102/110**

- Thesis Title: Issues concerning adoption of direct transmission in centrifugal turbines
- Area of Study: mechanical design

High School: **Istituto Tecnico SIAI Marchetti**, 21052 Busto Arsizio (VA), Italy

Aeronautical Technical School, September 2000 - July 2005, Degree: **100/100**

International Visiting

Politecnico di Milano, Milano, Italy, October 16 2023 - November 02 2023, SEMP Mobility

Stanford University, Stanford (CA), USA, January 2023 - July 2023, https://www.stanford.edu/

- Machine leraning applied to robot control
- Mentor: Prof. Marco Pavone, Autonomous Systems Laboratory (https://stanfordasl.github.io/)
- Key topics covered: control theory, machine learning, optimization

Singapore University of Technology and Design (SUTD), Singapore, May 2017 - June 2017, http://www.sutd.edu.sg

- Project: optimal control applied to industrial manipulator
- Mentor: Prof. David Braun, Dynamics & Control Laboratory
- Key topics covered: inverse dynamics control, optimal control, position tracking control, torque control

NASA-JPL, Pasadena (CA), USA, September 2013 - January 2014,
http://www-robotics.jpl.nasa.gov/index.cfm

- Project: Hedgehog Project, mobile robot for asteroids exploration
- Mentor: Dr. Issa A. D. Nesnas, Mobility and Manipulation Group 347 F
- Key topics covered: contact dynamics modeling and control of the mobile robotic platform

Katholieke Universiteit, Leuven, Belgium, September 2011 - October 2011,
https://www.kuleuven.be/english

- Project: Open RObot COntrol Software (OROCOS)
- Mentor: Prof. Herman Bruyninckx, Department of Mechanical Engineering
- Key topics covered: constrained robotics tasks programming and control

Advanced Training Courses

- Entrepreneurship Training Business Concept 2020 course, organized by Innosuisse Swiss Innovation Agency. The **SPINExo project** (related to the scientific publication "Design Methodology of an Active Back-Support Exoskeleton with Adaptable Backbone-Based Kinematics", Elsevier, International Journal of Industrial Ergonomics) has been selected as a case study within the course.
- 3 days "**introduction course to advanced composites techniques**" @ easycomposites: course is designed to provide an intensive practical introduction to the cornerstones of modern composites manufacturing, these being Resin Infusion and Prepreg laminating as well as appropriate pattern and mold making techniques for these processes.

Awards

- **Best poster award** @ HFR 2023. Paper title: Environment-based Assistance Modulation for a Hip Exosuit via Computer Vision.
- **Best workshop paper award** @ Computer Vision for Wearable Robotics Workshop, ICRA 2023. Paper title: Adapting Walking Assistance in Soft Exosuits According to Path Recognition via Computer Vision.
- **SUPSI Competitive Project Proposal Preparation Voucher** 2021. 10000 CHF award for the preparation of a competitive project to be submitted to ERC/SNF open call.
- **Best conference paper award** @ 2020 IEEE International Workshop on Metrology for Industry 4.0 & IoT (MetroInd4.0 & IoT). Paper title: Tactile Sensing with Gesture-Controlled Collaborative Robot.
- **MECSPE 2018 Innovation Prize, "New Horizons" Section**. Within the EURECA project, the human-robot cooperative application aircraft cabin components installation has been awarded.
- **Young researcher travel award** for high-impact publications from CNR-STIIMA. 2018.
- **Young researcher travel award** for high-impact publications from CNR-STIIMA. 2016.
- **SCAPATICCI** Ph.D. thesis prize from MESAP. 2016. (Mechatronics and Advanced Production Systems). Category: "Control and mechatronics for advanced processes". http://mesapiemonte.it/5007-5007.html.
- **UCIMU** master thesis prize. 2012. Category: "ROBOTICS, AUTOMATION AND TECHNOLOGY INFORMATION AND COMMUNICATIONS: APPLICATIONS IN MANUFACTURING". http://www.industriameccanica.it/content/ucimu-premia-gli-studenti.

Teaching Experience

Professor

- Professor: PhD course AI Applications to Industrial Robotics, 2024, Politecnico di Milano
- Professor: PhD course AI Applications to Industrial Robotics, 2023, Politecnico di Milano
- Professor: PhD course AI Applications to Industrial Robotics, 2022, Politecnico di Milano
- Professor: Applied Case Studies of Machine Learning and Deep Learning in Key Areas 1, 2023-2024, SUPSI
- Professor: Applied Case Studies of Machine Learning and Deep Learning in Key Areas 1, 2022-2023, SUPSI

- Professor: Applied Case Studies of Machine Learning and Deep Learning in Key Areas 1, 2022-2023, SUPSI
- Professor: Advanced Robotics, 2022-2023, eCampus online university
- Professor: Advanced Robotics, 2021-2022, eCampus online university
- Professor: Advanced Robotics, 2020-2021, eCampus online university
- Professor: Advanced Robotics, 2019-2020, eCampus online university

Teaching Assistant

- External Assistant Professor: Robotics and Mechatronics at Politecnico di Milano (September 2023 to February 2024).
- External Assistant Professor: Robotics and Mechatronics at Politecnico di Milano (September 2022 to February 2023).
- External Assistant Professor: Robotics and Mechatronics at Politecnico di Milano (September 2021 to February 2022).
- External Assistant Professor: Robotics and Mechatronics at Politecnico di Milano (September 2020 to February 2021).
- External Assistant Professor: Robotics and Mechatronics at Politecnico di Milano (September 2019 to February 2020).
- External Assistant Professor: Robotics and Mechatronics at Politecnico di Milano (September 2018 to February 2019).
- External Assistant Professor: Production for Made in Italy Lab at Politecnico di Milano (February 2018 to July 2018).
- External Assistant Professor: Robotics and Mechatronics at Politecnico di Milano (September 2017 to February 2018).
- Laboratory assistant: Mechatronic Systems and Laboratory A at Politecnico di Milano (October 2014 to February 2015).
- Laboratory assistant: Automation Laboratory at Politecnico di Milano (February 2014 to July 2014).
- Laboratory assistant: Mechatronic Systems and Laboratory A at Politecnico di Milano (October 2012 to February 2013).

PhD Committee

- 12/2020. PhD committee for the candidate Kiara Ottogalli, Universidad de Navarra, Spain.

Invited Lectures

- 2021. **La robotica indossabile: gli esoscheletri**. Associazione Italiana di Robotica e Automazione (SIRI).

Laboratories Creation and Management

- Robotics and AI laboratory hardware acquisition and management, industrial robotics and human-robot collaboration (exoskeletons, cobots, AI/ML for industrial applications) activities supervision, IDSIA, 2019 - now
- Collaborative robotics laboratory setup (selection of robotic systems and related devices), management, and supervision, Politecnico di Milano, Lecco, 2017 - now
- Responsible for "Laboratory of Robotic Prototype Development" (development of collaborative robots and exoskeletons prototypes), STIIMA - CNR, 2017 - 2019

Projects

Generative Robotics AI project

- P.I. and coordinator of the project;
- Funding: Hasler Foundation, $50,000$ CHF;
- Generative AI applied to robotics applications;
- 02/2024 - 12/2024.

SUPER HUMAN project, EIT-Manufacturing

- Coordinator of the project;

- Budget: $1,677,683$ euro;
- development of an assistive exoskeleton for working applications;
- 01/2024 - 12/2025.

HCP-bO project, EIT-Manufacturing
- P.I. of the project;
- Budget: $1,022,281$ euro;
- hybrid optimization for industrial processes;
- 01/2024 - 12/2024.

ACHEAS project, Eureka EUROSTARS
- P.I. of the project;
- Budget: $1,401,675$ CHF;
- automatic robotic platform for the aerospace industry;
- 01/2024 - 12/2025.

HYBRIDopt project
- P.I. and coordinator of the project;
- Funding: Hasler, $50,000$ CHF;
- combining Bayesian optimization and active preference learning optimization;
- 02/2023 - 11/2023.

PROPHET project
- P.I. of the project;
- Funding: SHOP4CF, $100,000$ €;
- human-centric optimization in the manufacturing context;
- 09/2022 - 03/2023.

Robot Evolutionary Learning, ROBOLUTIONARY project
- P.I. and coordinator of the project;
- Funding: Hasler Foundation, $50,000$ CHF;
- evolutionary learning applied to robotics applications;
- 05/2022 - 12/2022.

IMPALA, EIT-Manufacturing, Funded from 01/2022
- P.I. of the project;
- optimization of industrial processes making use of Bayesian Optimization and transfer learning.

SPEARHEAD, Innosuisse Flagship, Funded from 01/2022
- co-P.I. of the project;
- AI in the healthcare domain.

Digital Health Nation: NTN Innovation Booster Digital Health innovation, Innosuisse, Funded from 01/2022
- P.I. of the project;
- incubator supporting startups/spin-offs in the digital health sector.

ExoRescue, Eureka EUROSTARS, Funded from 10/2021
- P.I. of the project;
- design of an adaptive and user-based controller for a modular exoskeleton for rescue applications.

HYPER, Innosuisse, Funded from 02/2021
- data-driven/model-based mixed optimization of a laser machine parameters maximizing cutting performance.

H2020 CleanSky 2 (grant agreement n$^{\underline{o}}$ 886977), **Development of a multifunctional system for complex aerostructures ASSembly, ASSIsted by Neural Network** (ASSASSINN), Funded from 06/2020

- P.I. of the project;
- Funding: $899,605$ €;
- Definition of a Neural Network approach to online monitor the quality of aerospace processes, providing actions to human operators/robots;
- 06/2020 - 06/2022.

XSPINE EUROBENCH project

- P.I. and coordinator of the project;
- Funding: EUROBENCH, $60,000$ €;
- Evaluation and re-design of a back-support exoskeleton for labor assistance;
- 09/2021 - 05/2022.

REMOTe_XSPINE EUROBENCH project

- P.I. and coordinator of the project;
- Funding: EUROBENCH, $30,000$ €;
- Remote evaluation and re-design of a back-support exoskeleton for labor assistance;
- 09/2021 - 05/2022.

Preference-Based Optimization of Physical Human-Robot Collaboration project

- P.I. and coordinator of the project;
- Funding: Hasler Foundation, $49,960$ CHF;
- Preference-based optimization algorithm development and testing in a human-robot collaborative application;
- 07/2021 - 12/2021.

STEPbySTEP EUROBENCH project

- P.I. and coordinator of the project;
- Funding: EUROBENCH, $207,000$ €;
- Definition of a stair testbed to evaluate and benchmark lower limbs exoskeleton systems;
- 04/2019 - 12/2020.

VIOLA-II: Transfer learning in self-optimisation, Innosuisse, Funded from 07/2020

- managing the software development for optimization and transfer learning of process parameters;
- Funding: $203,315$ CHF;
- 07/2020 - 06/2021.

Optimizing cutting parameters of a laser-cutting machine, external company funded project, 2019

- Optimization and AI algorithms to achieve target cutting performance;
- main goals: design of experiments and optimization of control parameters of a laser-cutting machine.

Enabling Flexible Future Operators Requiring Task Level Empowering Strength Skills (EFFORTLESS), STIIMA-CNR funded project, Funded from 01/2018

- P.I. of the project;
- main goals: design and control of an exoskeleton for upper limbs to assist the human in onerous/heavy industrial tasks.

Enhanced Human-Robot cooperation in Cabin Assembly tasks (EURECA), H2020 CleanSky 2, Funded from 02/2017

- main contribution in defining the project proposal and in the writing phase;
- main goals: design a multi-robot system to assist the human operator in the aircraft cabin installation process. Development and control of an upper limbs exoskeleton device.

KUKA Innovation Award 2017

- Team leader;
- Finalist team in the competition, showing a hatbox installation application (using a KUKA LBR iiwa robot) in a mockup aircraft cabin at the Hannover Messe 2017.

European Robotics Challenges (EuRoC), http://www.euroc-project.eu

- Funding: European Community, $16,000,000$ €;
- Researcher in Tasks 1 - 3: development of interaction control algorithm for lightweight manipulator assembly task execution;
- 07/2014 - 10/2017.

Horizon 2020 (grant agreement n$^{\underline{o}}$ 637095) **Four By Three Project**: http://fourbythree.eu

- Funding: European Community, $6,942,866$ €;
- Responsible in Task 4.3: manual guidance algorithm for human-robot cooperation in industrial tasks;
- Researcher in Tasks 1.1, 1.3, 3.3: user-centered strategies for safe human-robot cooperation, system architecture, high-level control functions;
- 10/2014 - 09/2017.

FIDEAS

- Funding: Regione Lombardia, $1,050,000$ €;
- Researcher in Task 2.1: safe human - robot cooperation algorithms development;
- 07/2013 - 07/2015.

FACTOTHUMS

- Funding: European Community, $597,853$ €;
- Responsible in Task 10.2: multi-sensory robot control for human-robot cooperative tasks;
- Researcher in Task 10.1: multi-sensory robot management for high-productivity human-robot workspace sharing;
- 01/2013 - 12/2014.

FP7-ICT-2009-6-270460 **Active Project**, http://www.euroc-project.eu

- Funding: European Community, $5,778,000$ €;
- Responsible in Task 7.3: dynamics identification, calibration, and control of AH parallel robot;
- Researcher in Task 7.4: interaction control algorithms for lightweight manipulators;
- 03/2011 - 03/2015.

Expert for Projects Evaluation

- **Innosuisse expert** for projects evaluation (2023 - 2026)
- **Expert reviewer** for the CHIST-ERA Call (2023)
- **Expert reviewer** for project proposals @ Vrije Universiteit Brussel (2022)
- **Expert reviewer** for project proposals submitted to H2020 Robmosys call 2 and 3 (2021)
- **Expert reviewer** for project proposals submitted to Trinity project (2021)
- **Expert reviewer** for project proposals submitted to SHOP4CF call (2021)
- **Expert reviewer** for project proposals submitted to the NWO Talent Programme, Nederlands (2021)
- **Expert reviewer** for project proposals @ HES-SO (2021)
- **Expert reviewer** for project proposals submitted to ESMERA project first and second calls (2020, 2021)
- **Expert reviewer** for project proposals submitted to HBP call (2020)

Editor for Special Issue

- **Control Engineering and Practice**, Elsevier. 2022. Recent Advances in Reliable Control and Cost-effective Engineering Design for Autonomous Systems. Guest editors: Hamid Reza Karimi, Roveda Loris, Ning Wang, Philip A. Wilson.
- **Frontiers in Robotics and AI**. 2022. Human-robot collaboration in industry 5.0: a human-centric AI-based approach. Guest editors: Roveda Loris, Diego Borro, Arash Ajoudani.
- **MDPI Applied Science**. 2021. Motor Control and Robot Learning. Guest editors: Andrej Gams, and Roveda Loris.
- **MDPI Robotics**. 2020. Challenges and Research Directions for Human-Centered Robotized Ecosystem Able to Learn and Adapt. Guest editors: Roveda Loris, Braghin Francesco, Sotiris Makris and Petar B. Petrovic.
- **MDPI Designs**. 2020. Design and control of collaborative robotic solutions and wearable assistive robots to enhance human capabilities. Guest editors: Loris Roveda, Giovanni Legnani, Jesus Ortiz.

Editor for Conference Special Section

- **IEEE CASE 2024**. Dario Sanalitro, Enrico Ferrentino, Loris Roveda, Alessandro Palleschi. Innovations in Robotics and Automation for Enhanced Healthcare.

Patents

- Michael Held, Dario Piga, **Loris Roveda**, Alessio Benavoli, Luca Maria Gambardella. 2023. Computer Implemented Method Of And Optimisation Tool For Refinement Of Laser Cutting Processing Parameters By Means Of An Optimization Tool.

Journal Publications

[1] Matteo Meregalli Falerni, Vincenzo Pomponi, Hamid Reza Karimi, Matteo Lavit Nicora, Le Anh Dao, Matteo Malosio, **Loris Roveda**. 2024. A Framework for Human-Robot Collaboration Enhanced by Preference Learning and Ergonomics. Elsevier, Robotics and CIM. DOI: https://doi.org/10.1016/j.rcim.2024.102781.

[2] Giulio Onori, Asad Ali Shahid, Francesco Braghin, **Loris Roveda**. 2024. Adaptive Optimization of Hyper-Parameters for Robotic Manipulation through Evolutionary Reinforcement Learning. Springer, Journal of Intelligent & Robotic Systems. DOI: 10.1007/s10846-024-02138-8.

[3] Charbel Barsomian, Babu Eswaran, Mattia Pesenti, Marta Gandolla, Francesco Braghin, Emanuele Carpanzano, **Loris Roveda**. 2024. Dynamic Characterization and Control of a Back-Support Exoskeleton 3D-Printed Cycloidal Actuator. Elsevier, CIRP Annals. DOI: https://doi.org/10.1016/j.cirp.2024.03.002.

[4] **Loris Roveda**, Lorenzo Mantovani, Marco Maccarini, Francesco Braghin, Dario Piga. 2023. Optimal Physical Human-Robot Collaborative Controller with User-Centric Tuning. Elsevier, Control Engineering Practice.
DOI: https://doi.org/10.1016/j.conengprac.2023.105621.

[5] **Loris Roveda**, Palaniappan Veerappan, Marco Maccarini, Giuseppe Bucca, Arash Ajoudani, Dario Piga. 2023. A Human-Centric Framework for Robotic Task Learning and Optimization. Elsevier, Journal of Manufacturing Systems.
DOI: https://doi.org/10.1016/j.jmsy.2023.01.003.

[6] Beatrice Luciani, **Loris Roveda**, Francesco Braghin, Alessandra Pedrocchi, Marta Gandolla. 2023. Trajectory learning by therapists' demonstrations for an upper limb rehabilitation exoskeleton. IEEE, Robotics and Automation Letters. DOI: 10.1109/LRA.2023.3285081.

[7] Kaan Karas, Luca Pozzi, Alessandra Pedrocchi, Francesco Braghin, **Loris Roveda**. 2023. Brain-Computer Interface for Robot Control with Eye Artifacts for Assistive Applications. Springer, Scientific Reports. DOI: 10.1038/s41598-023-44645-y.

[8] Francesco Missiroli, Pietro Mazzoni, Nicola Lotti, Enrica Tricomi, Francesco Braghin, **Loris Roveda**, Lorenzo Masia. 2023. Integrating Computer Vision in Exosuits for Adaptive Support and Reduced Muscle Strain in Industrial Environments. IEEE, Robotics and Automation Letters. DOI: 10.1109/LRA.2023.3337693.

[9] Enrica Tricomi, Mirko Mossini, Francesco Missiroli, Nicola Lotti, Xiaohui Zhang, Michele Xiloyannis, **Loris Roveda**, Lorenzo Masia. 2023. Environment-based Assistance Modulation for a Hip Exosuit via Computer Vision. IEEE, Robotics and Automation Letters. DOI: 10.1109/LRA.2023.3256135.

[10] Xin Jing, **Loris Roveda**, Jianfei Li, Yaobing Wang, Haibo Gao. 2023. An Adaptive Impedance Control for Dual-arm Manipulators incorporated with the VDC. SAGE, Journal of Vibration and Control. DOI: https://doi.org/10.1177/10775463231182462.

[11] Matteo Beghi, Francesco Braghin, **Loris Roveda**. 2023. Enhancing Disassembly Practices for Electric Vehicle Battery Packs: A Narrative Comprehensive Review. MDPI Designs. DOI: https://doi.org/10.3390/designs7050109.

[12] Gabriele Gambirasio, Mattia Pesenti, Mattia Panzenbeck, Marta Gandolla, **Loris Roveda**, Mario Covarrubias. 2023. A 3D-Printed Cycloidal Drive Actuator for Compliant Human-Robot Interaction: Design and Integration for a Low-Back Exoskeleton. Computer-Aided Design and Applications Journal. DOI: 10.14733/cadaps.2024.791-806.

[13] **Loris Roveda**, Andrea Testa, Asad Ali Shahid, Francesco Braghin, Dario Piga. 2022. Q-Learning-Based Model Predictive Variable Impedance Control for Physical Human-Robot Collaboration. Elsevier, Artificial Intelligence. DOI: https://doi.org/10.1016/j.artint.2022.103771.

[14] **Loris Roveda**, Andrea Bussolan, Francesco Braghin, Dario Piga. 2022. Robot Joint Friction Compensation Learning Enhanced by 6D Virtual Sensor. Wiley, International Journal of Robust and Nonlinear Control. DOI: 10.1002/rnc.6108.

[15] Asad Ali Shahid, Dario Piga, Francesco Braghin, **Loris Roveda**. 2022. Continuous Control Actions Learning and Adaptation for Robotic Manipulation through Reinforcement Learning. Springer, Autonomous Robots. DOI: 10.1007/s10514-022-10034-z.

[16] Luca Pozzi, Marta Gandolla, Filippo Pura, Marco Maccarini, Alessandra Pedrocchi, Francesco Braghin, Dario Piga, **Loris Roveda**. 2022. Grasping Learning, Optimization, and Knowledge Transfer in the Robotics Field. Springer, Scientific Reports. DOI: https://doi.org/10.1038/s41598-022-08276-z.

[17] Alessandro Formenti, Giuseppe Bucca, Asad Ali Shahid, Dario Piga, **Loris Roveda**. 2022. Improved Impedance/Admittance Switching Controller for the Interaction with a Variable Stiffness Environment. Complex Engineering Systems. DOI: 10.20517/ces.2022.16

[18] **Loris Roveda**, Asad Ali Shahid, Dario Piga. 2021. Sensorless Optimal Interaction Control Exploiting Environment Stiffness Estimation. IEEE, Transactions on Control System Technology. DOI: 10.1109/TCST.2021.3061091.

[19] **Loris Roveda**, Beatrice Maggioni, Elia Marescotti, Asad Shahid, Andrea Maria Zanchettin, Alberto Bemporad, Dario Piga. 2021. Pairwise Preferences-Based Optimization of a Path-Based Velocity Planner in Robotic Sealing Tasks. IEEE, Robotics and Automation Letters. DOI: 10.1109/LRA.2021.3094479.

[20] **Loris Roveda**, Daniele Riva, Giuseppe Bucca, Dario Piga. 2021. Sensorless Optimal Switching Impact/Force Controller. IEEE, Access.
DOI: 10.1109/ACCESS.2021.3131390.

[21] **Loris Roveda**, Marco Maroni, Lorenzo Mazzuchelli, Loris Praolini, Asad Ali Shahid, Giuseppe Bucca, and Dario Piga. 2021. Robot End-Effector Mounted Camera Pose Optimization in Object Detection-Based Tasks. Springer, Journal of Intelligent & Robotic Systems.
DOI: https://doi.org/10.1007/s10846-021-01558-0

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