Enrico Mingo Hoffman, Ph.D. *ieee Senior Member*

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April 18, 1985

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Summary

Enrico Mingo Hoffman earned a Bachelor's Degree in *Electronics Engineering* and a Master's Degree in *Artificial Intelligence and Robotics* (cum laude) from the University of Rome "La Sapienza" in 2008 and 2011, respectively.

In 2012, he joined PAL Robotics in Barcelona as a Robotics Engineer, where he worked on navigation, SLAM, and localization for service robots.

He received his Ph.D. in *Robotics, Cognition, and Interaction Technologies* from the Istituto Italiano di Tecnologia (IIT) and the University of Genoa in 2016. His doctoral thesis was titled "*Simulation and Control of Humanoid Robots for Disaster Scenarios*" and focused on modeling, simulation, and control of floating-base robots, algorithms for hierarchical whole-body inverse kinematics, and Cartesian impedance control. During his Ph.D. studies, he worked with the COMAN humanoid platform and participated in developing the WALK-MAN robot. Enrico also participated in the DARPA Robotics Challenge (DRC) in 2015 as a main member of the WALK-MAN Team. He contributed to establishing the software infrastructure of the Advanced Robotics (ADVR) department and Humanoids & Human-Centered Mechatronics (HHCM) lab.

From 2016 to 2020, he worked as a Post-Doc and then as a Researcher at IIT, focusing on hierarchical whole-body inverse dynamics algorithms and Cartesian impedance control, tele-operation, motion planning, locomotion, optimization, and software architectures for humanoid robots. During this period, he participated in the development of COMAN +, CENTAURO, and other robotic platforms at the HHCM lab. He is also a co-founder of the IIT Technology Transfer Project ALBEROBOTICS.

From 2020 to 2022 he worked at PAL Robotics as a Senior Researcher in Humanoid Robotics, being responsible for the research in the humanoid business unit, and participating in the development of the KANGAROO humanoid robot.

He spent 9 months in 2023 as the Principal Investigator (PI) of the Unmanned Systems and Robotics group in the Leonardo Labs, and mutually coordinating two joint labs with IIT, the first one in collaboration with Dr. Arash Ajoudani, named *Robotics for Manufacturing*, and the second one with Dr. Nikos G. Tsagarakis, named *Robotics for Unstructured Environments*.

In 2023 he joined the INRIA Nancy - Grand Est as a permanent ISFP (INRIA Starting Faculty Position) Researcher inside the LARSEN Team.

His main research interests are the kinematics and dynamics of robots, fixed and floating-base robot motion control, manipulation, impedance and force control, task space whole-body control, compliant interaction, planning, trajectory optimization, locomotion, and teleoperation.

Experience

Inria Nancy Grand - Est — Nancy, France
ISFP Researcher at LARSEN Team — *October '23 – now*
Inria Starting Faculty Position researcher in INRIA Nancy Grand-Est and LORIA, working in the project-team LARSEN. I coordinate the research on planning and control of generic robotic systems, with particular emphasis on underactuated multi-limbed robots with many degrees of freedom, such as humanoids.

Leonardo Labs — Genova, Italy
Principal Investigator (PI) at Unmanned Systems & Robotics group — *January '23 – September '23*
Coordination of a team of 20 researchers, including Ms., Ph.D., and Post-Docs, for R&D activities, focused on autonomous robots and drones. Collaboration with the Italian Institute of Technology through two joint labs: the *Unstructured Robotics* Lab with Dr. Nikos G. Tsagarakis (Head of the HHCM Lab in IIT), and the *Robotics for Manufacturing* Lab. with Dr. Arash Ajoudani (Head of the HRI^2 Lab in IIT). Appointed as *Esperto Effettivo* in the judging commission of the XXXIX Italian Doctoral cycle for the curriculum *Industry 4.0*.

Fondazione Istituto Italiano di Tecnologia (IIT) — Genova, Italy
Affiliated Researcher at Humanoid and Human Centered Mechatronics (HHCM) Lab — *May '22 – now*
Research collaboration on Whole-Body Control and Model-Based Optimization.

PAL Robotics — Barcelona, Spain
Senior Researcher and Technical Expert in Humanoid Robotics — *September '21 – December '22*

I have worked on the kinematics and dynamics of series-parallel hybrid linkages applied to humanoid robotic systems, whole-body planning and control, trajectory optimization, and model predictive control for floating-base systems. I was the principal researcher in the KANGAROO Project and the EU Project EUROBENCH. In EUROBENCH, I served as a coach and evaluator for the three FSTPs projects, namely HUMATRAN, HUMABIMAN, and HUMABELIEF Additionally, I was responsible for writing EU Horizon Europe proposals.

Fondazione Istituto Italiano di Tecnologia (IIT) GENOVA, ITALY
Researcher at Humanoid and Human Centered Mechatronics (HHCM) Lab *September '20 – August '21*
I was the investigator in a national project in collaboration with ESA and GMV, where I coordinated the preliminary kinematics design and simulation studies of the new prototype of the ESA MARM robot developed by the HHCM Lab. Additionally, I have been main investigator in the EU Project EUROBENCH working on multi-contact sample-based planning on manifold, optimal control, and trajectory planning for fixed and floating-based systems.

Fondazione Istituto Italiano di Tecnologia (IIT) GENOVA, ITALY
Senior Post-Doc at Humanoid and Human Centered Mechatronics (HHCM) Lab *May '18 – August '20*
I specialize in developing algorithms and software for whole-body inverse dynamics control of floating-base systems, tele-operation of manipulators, and force control on quadrupedal platforms operating in unstructured scenarios and collaborative tasks. I was a key investigator in the TELEOPERAZIONE project, a joint project between IIT and INAIL where I coordinated the modeling and whole-body control work-package activities. Additionally, I was an investigator in the PHOLUS Project, a joint project between the Italian Ministry of Defence and the Ministry of Defence of the Republic of Singapore, where I contributed to the modeling and whole-body control work-packages. Lastly, I was part of the internal IIT committee responsible for evaluating Ph.D. students.

R2M Solution Srl SAVONA, ITALY
Consultant *December '17 – February '18*
Generic robotics consultancy.

Fondazione Istituto Italiano di Tecnologia (IIT) GENOVA, ITALY
Post-Doc at Advance Robotics (ADVR) Department *May '16 – April '18*
I specialize in developing algorithms and software for real-time whole-body control and tele-operation of humanoid robots, including bipeds and hybrid wheeled-legged quadrupeds, for disaster scenarios and collaborative tasks. I was the main researcher in the WALK-MAN and CogIMon European Projects, where I coordinated the modeling, whole-body control, and software work-packages activities. Additionally, I was an investigator in the CENTAURO European Project, where I contributed to the modeling and whole-body control work packages.

PAL Robotics BARCELONA, SPAIN
Robotics Engineer *Jan '12 – Dec '12*
I developed algorithms and software for various robotics applications, including robot navigation, simultaneous localization and mapping (SLAM), multi-mapping, and sensor fusion.

Education

Fondazione Istituto Italiano di Tecnologia (IIT) - University of Genoa GENOVA, ITALY
Doctor of Philosophy (Ph.D.) in Robotics, Cognition and Interaction Technologies, Humanoid and Compliant Robotics (Life and Humanoid Technologies) *2013 – 2016*
Ph.D. dissertation on "*Simulation and Control of Humanoid Robots for Disaster Scenarios*", focusing on hierarchical whole-body controllers applied to humanoid robots. I took part in the DARPA Robotics Challenge (DRC) as the main developer of the whole-body control algorithms, contributing as well to the software architecture, simulation, and model description for the COMAN and WALKMAN robots. I spent two months as visiting student at Nakamura & Yamamote Lab (YNL), Tokyo University, under the supervision of Prof. Yoshihiko Nakamura working on whole-body control and simulation of the humanoid robot HYDRA.

University of Rome "La Sapienza" ROME, ITALY
Master of Science in Engineering in Artificial Intelligence and Robotics *2009 – 2012*
As a student of the Master in Artificial Intelligence and Robotics I acquired the ability to design and implement AI and robotic systems and their specific components. In particular, I took exams related to control, industrial robotics, humanoid and mobile robotics, artificial intelligence, vision, and perception. During my Master's, I was selected to participate in the first Tohoku Robotics Summer School held by Tohoku University, Sendai, Japan. I was a member of the "La Sapienza" RoboCup Team, participating in the RoboCup 2011, held in Turkey, in the *Standard Platform League*. I spent six months at PAL Robotics, Barcelona, working on my Master thesis on SLAM in large, crowded, multi-floor environments entitled

"*A Multi-Mapping System for Service Robotics in Real Environments*". This project was supervised by Professor Giuseppe Oriolo, coordinator of the Robotics Laboratory of "La Sapienza" and Ing. Luca Marchionni, now CTO of PAL Robotics.

University of Rome "La Sapienza" Rome, Italy

Bachelor's Degree in Electronic Engineering *2004 – 2008*

Thesis on "*Design and Implementation of a Low Noise Power Supply Board for a Data Acquisition System*", supervised by Prof. Domenico Caputo and Prof. Augusto Nascetti. I was selected to participate as a student staff for the IEEE International Conference of Robotics and Automation (ICRA) 2007, held in Rome, organized by Prof. Alessandro De Luca and Prof. Paolo Dario.

Scientific High School "Istituto Ilaria Alpi" Diploma Roma, Italy

July 2004

Awards

OpenSoT Whole Body Motion Generation and Control Library EU-funded innovation under the innovation category *Exploration* in the year 2018

XBotCore Hard-Realtime Software Control Framework EU-funded innovation under the innovation category *Creation* in the year 2018

Belli et al., "Optimization-Based Quadrupedal Hybrid Wheeled-Legged Locomotion" Finalists for the Humanoids 2020 Best Oral Paper Award

Invited Talks & Lectures

University of Patras, Department of Electrical & Computer Engineering Lecture on *Optimal Control in Legged Locomotion for Real Robot*, winter 2024

Worcester Polytechnic Institute (WPI), Robotics Engineering Department Talk on *Model-Based Optimization for Whole-Body Motion Planning and Control*, in the RBE Colloquium Series Spring 2022

University College London (UCL), Computer Science Department Lecture on *Whole-Body Control 101: Kinematics*, in the COMP0129: Robotic Sensing, Manipulation and Interaction Master course, Spring, 2021

University College London (UCL), Computer Science Department Lecture on *Whole-Body Control 101: Kinematics*, in the COMP0129: Robotic Sensing, Manipulation and Interaction robotic Master course, November, 2019

ROS Developer Conference 2018: An online conference for ROS developers worldwide How to use OpenSoT Planning & Ctrl for Humanoid Robots

VVV14 the iCub Summer School Yarp Based Plugins for Gazebo Simulator

Patents

Malzahn, Jorn, Navvab Kashiri, Edoardo Romiti, Lorenzo Baccelliere, Stefano Cordasco, Arturo Laurenzi, Alessio Margan, **Enrico Mingo Hoffman**, Luca Muratore, and Nikos G. Tsagarakis. *Modular Configurable Robot, Corresponding Method and Computer Program Product*. United States Patent Application 20230028405, Filling December 17 2020, Granted 26 January 2023. URL: https://drive.google.com/file/d/1zVoznP_pCQz-6mqXEDHG6lQLUhkOlsA8/view?usp=sharing.

Malzahn, Jorn, Navvab Kashiri, Edoardo Romiti, Lorenzo Baccelliere, Stefano Cordasco, Arturo Laurenzi, Alessio Margan, **Enrico Mingo Hoffman**, Luca Muratore, and Nikos G. Tsagarakis. *Robot modulare configurabile, procedimento e prodotto informatico corrispondenti*. IT Patent 102019000024481, Filling December 18, 2019, Granted June 19, 2021. URL: https://drive.google.com/file/d/1E8xRwR9wtV1nwqlFoIF1RXUS43QRUgPr/view?usp=sharing.

Mingo Hoffman, Enrico, Matteo Parigi Polverini, Arturo Laurenzi, and Nikos G. Tsagarakis. *Metodo e dispositivo elettronico per controllare il movimento di un robot umanoide o di un braccio robotico utilizzando il numero minore di gradi di libertá necessari all'esecuzione di un compito e relativo supporto di memorizzazione leggibile da un elaboratore elettronico*. IT Patent 102019000021513, Filling November 19, 2019, Granted October 28, 2021. URL: https://drive.google.com/file/d/1enR8q8FXkOo9gTrzC3BdrigpEHux2R1z/view?usp=sharing.

Skills and Research Activity

I possess excellent verbal and communication skills, which have been demonstrated through my ability to deliver effective scientific talks and presentations at various dissemination events. Additionally, I have strong organizational skills and the ability to manage multiple projects and tasks simultaneously. I have experience in writing successful grant proposals and have a proven track record of managing and tutoring students effectively. I am also an excellent team player and am capable of managing teams effectively to achieve project objectives.

Editorial Activities: I serve as Associate Editor in

- the IEEE International Conference on Robotics and Automation (ICRA), *Humanoids and Animaloids*, for the period 2020-2022;
- the IEEE Robotics and Automation Letters (R-AL), *Theoretical Foundations*, for the period 2021-2024;
- the IEEE International Conference on Humanoid Robots (HUMANOIDS) for the years 2022-2024;
- the SAGE International Journal of Robotics Research (IJRR), *Robotic Systems*, for the years 2023-2024;
- the IEEE/RAS International Conference on Ubiquitous Robots (UR), for the year 2024;
- the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), for the year 2024.

I was the organizer and Corresponding Guest Editor for the Special Issue on "Humanoid Robot Applications in Real World Scenarios" in the IEEE Robotics and Automation Magazine (RAM).

From 2020 I am serving as Review Editor on the Frontiers in Robotics and AI Editorial Board for Humanoid Robotics and Field Robotics specialty sections. I was the organizer and Corresponding Guest Editor of the Frontiers in Robotics and AI Research Topic in Advancements in Trajectory Optimization and Model Predictive Control for Legged Systems.

I am serving as a reviewer for international journals and conferences such as IEEE T-RO, RA-L, RAM, HUMANOIDS, ICAR, ICRA, and IROS; Frontiers Neurorobotics; IFAC Mechatronics; Cambridge University Press Robotica, and more.

Other Activities: I am serving as Corresponding Chair (previously Co-Chair) and representative for the primary region of Europe for the IEEE Technical Committee on Whole-Body Control (TC-WBC) from 2021, with responsibility for the TC-WBC funds' management.

I am part of the Advisory Board of the UKRI Future Leaders Fellowship (FLF) project *RoboHike: Autonomous Quadrupedal Robot Navigation and Hiking in Challenging Rough Terrains*.

I was appointed as a judge for the 2nd RAMI Marine Robots competition held at the NATO STO Centre for Maritime Research and Experimentation (CMRE) in La Spezia, Italy.

I served as Chair of the IEEE ICRA 2024 session *TuAT6-CC - 2D/3D Visual Perception*.

I am part of the Organizing Committee of the IEEE/RAS International Conference on Humanoid Robotics (HUMANOIDS) 2024 as Local Organization Chair.

I am part of the Program Committee of the 17th International Workshop on Human-Friendly Robotics.

I served as an expert reviewer for a 2024 R'Equip proposal of the Swiss National Science Foundation (SNSF) entitled *Safety support system for dynamic experiments with mobile robots*.

I served as an expert reviewer for the Cascade Funding RAISE Spoke 4 proposals 2024 (Machine Learning and real-time data) of the Italian Piano Nazionale di Ripresa e Resilienza (PNRR).

Technical expertise: Software design and implementation, with(in) a team. Big fan of Agile methodologies and continuous integration (Hudson/Jenkins/Travis). Solid knowledge of C/C++, Python, and Matlab/Octave, and basic knowledge of Lua and BASH. Solid knowledge of programming and building tools such as CMake and Qt. Solid knowledge of robotics-oriented frameworks, libraries, and simulators such as, but not limited to, ROS, OROCOS, KDL, GAZEBO, CasADi, Pinocchio, MuJoCo, Eigen, etc... Solid knowledge of real-time (RT) control, in particular, I maturated experience in writing and debugging RT-safe code in Ubuntu-Xenomai. I have experience in developing applications for many different real hardware robotics platforms (electric and hydraulic) including manipulators, mobile platforms, humanoids, and quadrupedal robots.

Natural languages: Italian *(mother tongue)*, English *(full professional proficiency)*, Spanish *(elementary proficiency)*.

Research Grant Expertise

Development and management of national, international, and commercial projects. Preparation of Project proposals, including the following activities: design of work-packages, tasks, deliverables, and milestones, identification of project goals, and proper strategies to achieve them, in particular:

EU Proposal **CONCERT** Configurable Collaborative Robot Technologies Submitted at ICT-47, June 2020	Responsible for the preparation of the IIT tasks and related literature within the work package activities related to online safety verification and interaction control. This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101016007.
EU Proposal **COGIMON** Cognitive Interaction in Motion Submitted at ICT-23, 2014	I lead for Istituto Italiano di Tecnologia, Tasks in - WP1 Mechatronics and Impedance Control: 1.5 Multi-arm impedance control, 1.6 Whole-body impedance control - WP 2 Simulation: Task 6.2 Optimization for Multi-Contact Team Task.
INAIL-TELEOP Mobile Tele-operation robot platform for remote execution of tasks in unstructured environments. October 2016	Responsible for preparation of the IIT proposal parts related to the manipulation control tasks of the remote manipulator arm and system.
Proposal **Development of novel control algorithms for loco-manipulation on bipedal robots, and implementation on the TALOS and KANGAROO.** Submitted at *Ayudas Para Contratos Torres Quevedo 2021*	Proposal author and PI responsible for the whole proposal, work packages, and Gantt chart. This project has received funding from the *Programa Estatal de Promoción del Talento y su Empleabilidad del Plan Estatal de Investigación Científica y Técnica y de Innovación* for 38.704,00 Euro per year (up to 116.112,0 Euro for three years).
EU Proposal **MATISSE: Model-based engineering of Digital Twins for early verification and validation of Industrial Systems.**	I lead the technical and scientific writing of the Leonardo use case. I proposed the development of a digital-twin and simulation tools for tele-operated or autonomous manipulation tasks for In-Orbit Services using robotic arms. This project has received funding from the European Union's Horizon 2020 KDT research and innovation programme.
JCJC Project **MeRLin: Multi-limbed Robotos empowered by whole-body Loco-manipulation**	Proposal author and PI of the MeRLin project, a JCJC grant of 189.427,5 Euro financed by the French ANR. The project objective is to develop a robot-agnostic framework based on whole-body methodologies for the planning and control of loco-manipulation skills to enhance physical functionalities in complex robotic systems.

Student Supervision

Ph.D.

Rossini, Luca. "OFFLINE AND ONLINE PLANNING AND CONTROL STRATEGIES FOR THE MULTI-CONTACT AND BIPED LOCOMOTION OF HUMANOID ROBOTS." Now Post-Doc at Fondazione Istituto Italiano di Tecnologia, co-tutored (70%) with Dr. Nikos G. Tsagarakis. PhD thesis. University of Genoa, XXXV CICLO - BIOENGINEERING, ROBOTICS - Advanced, and humanoid robotics, 2020–2023. URL: https://iris.unige.it/handle/11567/1107993?mode=simple.

Ruscelli, Francesco. "PLANNING AND CONTROL STRATEGIES FOR MOTION AND INTERACTION OF THE HUMANOID ROBOT COMAN+." Now Post-Doc at Fondazione Istituto Italiano di Tecnologia (100%). PhD thesis. University of Genoa, XXXIII CICLO - BIOENGINEERING, ROBOTICS - Advanced, and humanoid robotics, 2019–2021. URL: http://hdl.handle.net/11567/1045142.

Laurenzi, Arturo. "MOTION CONTROL OF THE HYBRID WHEELED-LEGGED QUADRUPED ROBOT CENTAURO." Now Senior Technician at Fondazione Istituto Italiano di Tecnologia, co-tutored (70%) with Dr. Nikos G. Tsagarakis. PhD thesis. University of Genoa, XXXII CICLO - BIOENGINEERING, ROBOTICS - Advanced, and humanoid robotics, 2018–2020. URL: http://hdl.handle.net/11567/996233.

Master

Costanzi, Daniel. "CO-DESIGN OF ROBOTIC MANIPULATORS: AN APPROACH VIA GRADIENT-BASED OPTIMIZATION AND EVOLUTIONARY STRATEGIES". Co-tutored with Prof. Andrea Del Prete and Dr. Gabriele Fadini. Now robotics engineer in PAL Robotics. MA thesis. University of Trento, Mechatronics Engineering, Electronics and Robotics, 2024. URL: https://webapps.unitn.it/du/it/StrutturaAccademica/STO0008625/Tesi.

Buonocore, Pasquale. "A MODEL PREDICTIVE CONTROL APPROACH FOR FATIGUE AWARE ROBOTIC HEAVY MANIPULATION." Co-tutored with Dr. Nikos G. Tsagarakis, Dr. Matteo Parigi Polverini and Prof. Andrea Del Prete. Now Model-Based Design Engineer in ItalSystem srl. MA thesis. University of Trento, Mechatronics Engineering, Electronics and Robotics, 2020. URL: https://webapps.unitn.it/du/en/Persona/PER0197808/Tesi.

Roscia, Francesco. "GAP-CROSSING WITH THE CENTAURO ROBOT: PLANNING VIA PROBABILISTIC SAMPLING AND NONLINEAR OPTIMIZATION." Ms Thesis supervision. Co-tutored with Dr. Nikos G. Tsagarakis and Prof. Giuseppe Oriolo. Now Ph.D. student at the Dynamic Legged System (DLS) group, Istituto Italiano di Tecnologia. MA thesis. University of Rome "La Sapienza", Ingegneria Automatica - Control Engineering, 2020.

Sodano, Matteo. "GAP-CROSSING WITH THE CENTAURO ROBOT: WHOLE-BODY MOTION GENERATION AND CONTROL." Co-tutored with Dr. Nikos G. Tsagarakis and Prof. Giuseppe Oriolo. Now Ph.D. student at the University of Bonn, Germany. MA thesis. University of Rome "La Sapienza", Ingegneria Automatica - Control Engineering, 2020.

Internships and Collaborations

The Robotics Lab IDSIA, Dalle Molle Institute for Artificial Intelligence, Lugano, Swiss

Team Larsen Institut National de Recherche en Informatique et en Automatique (INRIA), Nancy, France, March 2018 (**invited**)

Biorobotics Laboratory (BioRob) École polytechnique fédérale de Lausanne (EPFL), Lousanne, Switzerland, short period

CITEC, Cognitive Systems Engineering Group Bielefeld University, Bielefeld, Germany, short period

Nakamura Lab, Department of Mechano Informatics University of Tokyo, Hongo Campus, Tokyo, Japan, from July to September 2015

Centro Enrico Piaggio Università di Pisa, Pisa, Italy, short period

Robotics Competitions

RoboCup, 2011 Instanbul, Turkey, Team SPQR+UChile

DARPA Robotics Challenge, 2015 Pomona, California, Team WALK-MAN

Certifications

Corso di aggiornamento per Lavoratore robotica, 2024 AiFOS

Risk prevention in office workplaces, 2021 PAL Robotics, Quirónprevención

Real-Time Linux in Industrial Appliances, 2018 BIS-LINUX

Deep Learning Specialization, 2018 Coursera

Corso sul Decreto legislativo 231 del 2001 e legge 190 sul 2012, 2018 KPMG

FORMAZIONE OBBLIGATORIA SPECIFICA LAVORATORI, mansione AMM-INF-ROB, 2016 Istituto Italiano di Tecnologia

6.832x: Underactuated Robotics, 2014 edX MITx, The Massachusetts Institute of Technology

Intro to Computer Science: Build a Search Engine and a Social Network, 2012 Udacity Certificate

Computer Science 373: Programming a Robotic Car, 2012 Udacity Certificate

Seminars and Schools

TEMPO Spring School "Theory and Numerics for Nonlinear Model Predictive Control 2015" University of Freiburg, Freiburg, Germany

KoroiBot Summer School 2014 University of Heidelberg, Heidelberg, Germany

VVV13 the iCub Summer School Fondazione Istituto Italiano di Tecnologia, Sestri Levante, Italy

2nd International Workshop on Standard Robotic Software Architecture for RoboCupRescue based on ROS Landau University, Koblenz, Germany

Robotics Summer School 2010 Tohoku University, Sendai, Japan

Attended Conferences, Workshops and Events

CASE 2024 - IEEE International Conference on Automation, Science, and Engineering Workshop on Human Movement Understanding, Whole-Body Control, and Human-Robot Interfaces, with *OpenSoT: A Software Tool for Advanced Whole-Body Control* **(invited)**

International Conference on Space Robotics iSpaRo 2024 Workshop on Advances in Orbital Robotics: In Orbit Manipulation, Servicing, and Assembly, with *Whole-Body Motion Control in Orbital Scenarios through Centroidal Momentum Conservation.*

IEEE-RAS International Conference on Robotics and Automation ICRA 2024 Workshop on Advancements in Trajectory Optimization and Model Predictive Control for Legged Systems (2nd edition) **(organizer)**

ERF 2024 - European Robotics Forum Workshop Advancements in High Performance Humanoid & Legged Robot Functionalities, with *Modeling and Numerical Analysis of Kangaroo Lower Body* **(invited)**

Interational Conference on Biomimetic and Biohybrid Systems: Living Machines 2023 Workshop on Human-inspired robotic embodiment: interdisciplinary convergences, with *Whole-Body Loco-Manipulation in Real World Environment* **(invited)**

IEEE-RAS International Conference on Robotics and Automation ICRA 2023 Design and Validation of a Multi-Arm Relocatable Manipulator for Space Applications

ERF 2023 - European Robotics Forum Round-table discussion in the Workshop on Humanoid & legged robots: pushing the limits of performance **(invited)**

IEEE-RAS International Conference on Humanoid Robots HUMANOIDS 2022 Workshop on Advancements in Trajectory Optimization and Model Predictive Control for Legged Systems **(organizer)**
Workshop on Agile Humanoid Locomotion; from Animation Characters to Real Robots with *Trajectory Optimization and Model Predictive Control for Agile Bipedal Locomotion* **(invited)**

IEEE-RAS International Conference on Robotics and Automation ICRA 2022 Workshop on New frontiers of parallel robotics (second edition) with *Whole-Body Kinematics Modeling in presence of Closed-Linkages: application to the Kangaroo Biped Robot*

IEEE/RSJ International Conference on Intelligent Robots and Systems IROS 2020 Workshop on: Bringing constraint-based robot programming to real-world applications **(co-organizer)**

IEEE-RAS International Conference on Robotics and Automation ICRA 2020 A Study on Sparse Hierarchical Inverse Kinematics Algorithms for Humanoid Robots

MARS 2019 Part of the CENTAURO support team of Dr Nikos G. Tsagarakis **(invited)**

IEEE-RAS International Conference on Humanoid Robots, HUMANOIDS 2019 Workshop on Teleoperation of Humanoid Robots - TeleOperation of Humanoid Robots: 5 years since the DRC **(invited)**

Italy - Japan WorkShop 2018: The First Robots The Vitruvian Robot **(invited)**

IEEE-RAS International Conference on Humanoid Robots HUMANOIDS 2018 Balancing Control through Post-Optimization of Contact Forces

IEEE/RSJ International Conference on Intelligent Robots and Systems IROS 2018 Full-Day Tutorial on A Hands-on Tutorial on XBotCore: A Real-Time Cross-robot and Cross-framework Software Architecture (**organizer)**

IEEE-RAS International Conference on Robotics and Automation ICRA 2018 Multi-Priority Cartesian Impedance Control based on Quadratic Programming Optimization,
Workshop on Dynamic Legged Locomotion in Realistic Terrains: Algorithmic and Physical Performance Advancements and Challenges - Whole-Body Compliant Control of iCub: first results with OpenSoT

IEEE-RAS International Conference on Humanoid Robots, HUMANOIDS 2017 Robot Control for Dummies: Insights and Examples using OpenSoT

IEEE/RSJ International Conference on Intelligent Robots and Systems IROS 2017 Workshop on Learning for Collaborative Robotics: Enabling Flexible, Redeployable and Agile Industrial Applications - Transferring Robotics Software from Research to Industry: The OpenSoT Library

ERL 2017 - European Robotics League@Rescue The WALK-MAN EC Project (**invited)**

ERF 2017 - European Robotics Forum The WALK-MAN EC Project (**invited)**

RSJ 2016 - Conference of the Robotics Society of Japan On the Implementation of the Inverse Kinematics Solver Used in the WALK-MAN Humanoid Robot

ARK 2016 - International Symposia on Advances in Robot Kinematics Robot Dynamics Constraint for Inverse Kinematics

RSJ 2015 - Conference of the Robotics Society of Japan (**visiting PhD student)**

IEEE-RAS International Conference on Humanoid Robots HUMANOIDS 2015 Workshop on Reusable and Open-source Modules for Humanoid Robots - The Robotic Software Developed by WALK-MAN Team for the DRC Finals

IEEE-RAS International Conference on Robotics and Automation ICRA 2015 OpenSoT: a Whole-Body Control Library for the Compliant HumanoidRobot COMAN

IEEE/RSJ International Conference on Intelligent Robots and Systems IROS 2014 Workshop on Whole-Body Control for Robots in the Real World - A Whole-Body Stack of Tasks Compliant Control for the Humanoid Robot COMAN

ROS Developer Conference ROSCON 2014 Control and perception architecture for the tele-operation of the humanoid robot COMAN

IEEE-RAS International Conference on Humanoid Robots HUMANOIDS 2014 Workshop on software architectures and methodologies for developing humanoid robots - The Software Architecture for the Humanoid Robot COMAN (**invited)**

MESAS 2014 - Modelling and Simulation for Autonomous Systems Workshop Yarp Based Plugins for Gazebo Simulator

ERF 2014 - European Robotics Forum

IEEE-RAS International Conference on Humanoid Robots HUMANOIDS 2013 Upper limb compliant strategy exploiting external physical constraints for humanoid fall avoidance,
Workshop on Torque Controlled Robots - Compliant Humanoid Robot: COMAN

6th International Workshop on Human-Friendly Robotics (HFR 2013) Upper Limb Compliant Strategy Exploiting External Contacts for Humanoid Robots

IEEE-RAS International Conference on Robotics and Automation ICRA 2007 (**student staff)**

List of Publications

Journal articles

Testa, Andrea, Marco Laghi, Edoardo del Bianco, Gennaro Raiola, **Enrico Mingo Hoffman**, and Arash Ajoudani. "A Stable Method for Task Priority Adaptation in Quadratic Programming via Reinforcement Learning". In: *Robotics and Computer-Integrated Manufacturing* 91 (2025). DOI: https://doi.org/10.1016/j.rcim.2024.102857.

Ferrari, Paolo, Luca Rossini, Francesco Ruscelli, Arturo Laurenzi, Giuseppe Oriolo, Nikos G. Tsagarakis, and **Enrico Mingo Hoffman**. "Multi-contact planning and control for humanoid robots: Design and validation of a complete framework". In: *Robotics and Autonomous Systems* 166 (2023). DOI: https://doi.org/10.1016/j.robot.2023.104448.

Paolillo, Antonio, Marco Forgione, Dario Piga, and **Enrico Mingo Hoffman**. "Fast predictive visual servoing: A reference governor-based approach". In: *Control Engineering Practice* 136 (2023), p. 105521. DOI: https://doi.org/10.1016/j.conengprac.2023.105521.

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Enrico Mingo Hoffman. *Learning about the Open Stack of Tasks for Humanoids With Enrico Mingo Hoffman*. https://www.theconstructsim.com/rdp-005-learning-open-stack-tasks-humanoids-enrico-mingo-hoffman/. 2018.

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Enrico Mingo Hoffman. *Intervention at the television program RAI Scuola NAUTILUS: Il Robot Umanoide*. https://www.raiscuola.rai.it/scienze/articoli/2021/02/Cose-un-robot-Da-Mazinga-allumanoide-02f0699d-8ffb-4c49-ad1e-ec1b84634586.html. 2014.

Interests

Non-exhaustive: books (novels, science fiction, popular science, comics), open source, software engineering (methodologies), travelling, motorbikes, swimming, running, walking, video-games, hobby modeling,

movies.