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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 humanoid platform COMAN and participated in the development of the WALKMAN robot. Enrico also participated in the DARPA Robotics Challenge (DRC) in 2015 as a main member of the WALK-MAN Team. He contributed to the establishment of 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, lo-

comotion, optimization, and software architectures for humanoid robots. During this period, he participated in the development of the COMAN+, CENTAURO, and other robotics 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 tele-operation.

## Experience

### Inria Nancy Grand - Est

ISFP Researcher at LARSEN Team

NANCY, FRANCE

October '23 – now

### Leonardo Labs

Principal Investigator (PI) at Unmanned Systems & Robotics group

GENOVA, ITALY

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<sup>2</sup> 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)

Affiliated Researcher at Humanoid and Human Centered Mechatronics (HHCM) Lab

GENOVA, ITALY

May '22 – now

Research collaboration.

### PAL Robotics

Senior Researcher and Technical Expert in Humanoid Robotics

BARCELONA, SPAIN

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.

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## **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”**

**Bachelor’s Degree in Electronic Engineering**

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.

ROME, ITALY

2004 – 2008

**Scientific High School “Istituto Ilaria Alpi” Diploma**

ROMA, ITALY

July 2004

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## 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

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## Invited Talks & Lectures

**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

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

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

**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

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## 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, Filing December 17 2020, Granted 26 January 2023. URL: [https://drive.google.com/file/d/1zVoznP\\_pCQz-6mqXEDHG61QLUhk01sA8/view?usp=sharing](https://drive.google.com/file/d/1zVoznP_pCQz-6mqXEDHG61QLUhk01sA8/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, Filing December 18, 2019, Granted June 19, 2021. URL: <https://drive.google.com/file/d/1E8xRwR9wtV1nwq1FoIF1RXUS43QRUGPr/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 libertà necessari all’esecuzione di un compito e relativo supporto di memorizzazione leggibile da un elaboratore elettronico*. IT Patent 102019000021513, Filing November 19, 2019, Granted October 28, 2021. URL: <https://drive.google.com/file/d/1enR8q8FXk0o9gTrzC3BdrigpEHux2R1z/view?usp=sharing>.

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## 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.

**Research Grant expertise:** Development and management of EC co-funded (FP7, H2020, Horizon EU) 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:

<p>EU Proposal <b>CONCERT</b> Configurable Collaborative Robot Technologies Submitted at ICT 47, June 2020</p>	<p>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.</p>
<p><b>INAIL-TELEOP</b> Mobile Tele-operation robot platform for remote execution of tasks in unstructured environments. October 2016</p>	<p>Responsible for preparation of the IIT proposal parts related to the manipulation control tasks of the remote manipulator arm and system.</p>
<p>Proposal <b>Development of novel control algorithms for loco-manipulation on bipedal robots, and implementation on the TALOS and KANGAROO</b>. Submitted at <i>Ayudas Para Contratos Torres Quevedo 2021</i></p>	<p>Principal Investigator (PI) responsible for the whole proposal, work packages, and Gantt chart. This project has received funding from the European Union's Horizon 2020 KDT research and innovation programme.</p>
<p>EU Proposal <b>MATISSE: Model-based engineering of Digital Twins for early verification and validation of Industrial Systems</b>. Submitted at</p>	<p>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.</p>

**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 2021-2023;
- the IEEE International Conference on Humanoid Robots (HUMANOIDS) for the years 2022-2023;
- the SAGE International Journal of Robotics Research (IJRR), *Robotic Systems*, for the year 2023;
- the IEEE/RAS International Conference on Ubiquitous Robots (UR), 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 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.

**Student Supervision:**

## Ph.D.

- Rossini, Luca. "Offline and Online Planning and Control Strategies for the Multi-Contact and Biped Locomotion of Humanoid Robots". Co-tutored 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, co-tutored with Dr. Nikos G. Tsagarakis. 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 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

- 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>.
- Jenssen, Paul. "Optimal Tameshiwari". Co-tutored with Dr. Nikos G. Tsagarakis and Dr. Matteo Parigi Polverini. MA thesis. Eindhoven University of Technology, Mechanical Engineering, 2020.
- 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.

## Ongoing Students

- Costanzi, Daniel. "Thesis on CoDesing for robots". Co-tutored with Prof. Andrea Del Prete. MA thesis. University of Trento, Mechatronics Engineering, Electronics and Robotics, 2022.

**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, 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*).

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## 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

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## Robotics Competitions

**RoboCup, 2011** Istanbul, Turkey, Team SPQR+UCHile  
**DARPA Robotics Challenge, 2015** Pomona, California, Team WALK-MAN

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## Certifications

**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

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## 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  
**2<sup>nd</sup> International Workshop on Standard Robotic Software Architecture for RoboCupRescue based on ROS** Landau University, Koblenz, Germany  
**Robotics Summer School 2010** Tohoku University, Sendai, Japan

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## Attended Conferences, Workshops and Events

**International 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 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 Humanoid Robot 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**)

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## List of Publications

### Journal articles

- 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>.
- Castano, A. Juan, Joseph Humphreys, **Enrico Mingo Hoffman**, Noelia Fernández Talavera, Maria Cristina Rodríguez Sanchez, and Chengxu Zhou. "Benchmarking Dynamic Balancing Controllers for Humanoid Robots". In: *MDPI Robotics* 11.5 (2022). doi: [10.3390/robotics11050114](https://doi.org/10.3390/robotics11050114).
- Enrico Mingo Hoffman**, Matteo Parigi Polverini, and Chengxu Zhou. "Editorial: Advancements in Trajectory Optimization and Model Predictive Control for Legged Systems". In: *Frontiers in Robotics and AI* (2022). doi: [10.3389/frobt.2022.1002552](https://doi.org/10.3389/frobt.2022.1002552).
- Ruscelli, Francesco, Arturo Laurenzi, Nikos G. Tsagarakis, and **Enrico Mingo Hoffman**. "Horizon: a Trajectory Optimization Framework for Robotic Systems". In: *Frontiers in Robotics and AI* 9 (2022). doi: [10.3389/frobt.2022.899025](https://doi.org/10.3389/frobt.2022.899025).
- Enrico Mingo Hoffman** and Nikos G. Tsagarakis. "The Math of Tasks: a Domain Specific Language for constraint-based task specification". In: *International Journal of Humanoid Robotics* 18 (2021). doi: [10.1142/S0219843621500080](https://doi.org/10.1142/S0219843621500080).
- Romiti, Edoardo, Jörn Malzahn, Navvab Kashiri, Francesco Iacobelli, Marco Ruzzon, Arturo Laurenzi, **Enrico Mingo Hoffman**, Luca Muratore, Alessio Margan, Lorenzo Baccelliere, Stefano Cordasco, and Nikos G. Tsagarakis. "Towards a Plug-and-Work Reconfigurable Cobot". In: *IEEE Transaction on Mechatronics (T-MECH)* (2021), pp. 1–13. doi: [10.1109/TMECH.2021.3106043](https://doi.org/10.1109/TMECH.2021.3106043).
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## 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.

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