



## ENHANCING HUMAN-MACHINE SYMBIOSIS VIA EXOSUITS

*Lecture by Lorenzo Masia - Heidelberg University*

### BIOSKETCH

**Lorenzo Masia** started his path in robotics spending two years at the Mechanical Engineering Dept. of the **Massachusetts Institute of Technology** (MIT) (from Jan-2005 to Dec 2006) working at the Newman Lab for Biomechanics and Human Rehabilitation.

He was then Team Leader at the **Italian Institute of Technology** (IIT) in the Robotics Brain and Cognitive Sciences Department and He started his academic path as Assistant Professor at the School of Mechanical & Aerospace Engineering (MAE) at **Nanyang Technological University** (NTU) of Singapore (2013-2018). He was Associate Professor in Biodesign at the Department of Biomechanical Engineering of the **University of Twente** (The Netherlands) from June 2018 to March 2019.

Now, since April 2019, He is Full Professor in Medical Technology at **Heidelberg University** (Germany) at the Institute of Computer Engineering or Institut für Technische Informatik (ZITI), leading the **ARIES Lab** (Assistive Robotics and Interactive ExoSuits).

### ABSTRACT

Soft exoskeletons or exosuits have been introduced in the last decade as possible candidates to overcome the limitations and acceptability of wearable technology.

Despite exosuits initially promised tangible improvements, yet their soft wearable architecture presents strong drawbacks, placing this technology more in a complementary position rather than on a higher step of the podium with respect to their predecessors.

During my speech, I will introduce the progress of our research on soft

wearable exosuits at the Assistive Robotics and Interactive Exosuits Lab (ARIES), by presenting novel solutions on mechanical design, a novel implementation of control strategies based on machine learning to master the non-linear behaviors. I will discuss in detail how using biosignals by means of real-time techniques based on musculoskeletal dynamics to provide a symbiotic interface between the exosuit and the user and introduce also our latest results in clinical applications.

The seminar is promoted by **Leonardo Cappello**, Assistant Professor at The BioRobotics Institute, within the framework of the national project **BioArm**.

### DATE

12/12/2022

### HOURS

12 p.m.

### PLACE

Aula 1 - Polo Sant'Anna  
Valdera, Istituto di BioRobotica

*Scan Qr Code for more information about seminar*

