

## Dr. Eduardo Palermo



Assistant Professor – Sapienza University of Rome

Department of Mechanical and Aerospace Engineering

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My research mission is the design, implementation, and validation of new technologies in Experimental Mechanics and Biomechanics, Engineering for Rehabilitation, with focus on human gait and motion analysis, and progressively embracing adjacent fields. My research activity involved wearable inertial sensors, machine learning algorithms, mechatronics, human-computer interactions, bio-signal processing.

In Biomechanics field, the studies I conducted included in-vivo experiments in cooperation with clinical research partners. Innovative solutions developed have been tested on studies involving subjects affected with different neuromuscular diseases, such as Cerebral Palsy, Dystonia, Multiple Sclerosis, Stroke, Parkinson's, Orthopaedic disorders.

In Experimental Mechanics, I cooperated with several companies for the design, implementation, and testing of innovative solutions pivoting on measurement technologies, and embracing diverse fields such as military recognition robots, exoskeletons, electrical systems, aerospace structures.

I published more than 50 papers on peer reviewed international journals, most of them in top ranking (Q1). Most of the research contribution involved IRB studies on human subjects, conducted by multidisciplinary teams involving engineers, neurologist, physiatrists, therapists, and psychologists, with different levels of responsibility, from the direct execution of experiments and data analysis, up to the experimental design and coordination of the entire team.

### AREAS OF EXPERTIES

- IMUs
- Wearable sensors
- Motion capture
- 3D printed sensors
- Biomechanics
- Mechatronics
- Rehabilitation robotics
- Mechanical measurements
- Bio-signals

### PREVIOUS POSITIONS

2014 - 2015      Postdoc  
Department of Mechanical and Aerospace Engineering, New York University, Tandon School of Engineering, NY, USA.

### EDUCATION

2014              PhD  
Industrial Production Engineering (ING/IND-12), Department of Mechanical and Aerospace Engineering, Sapienza University of Rome, Italy.  
PhD Supervisor: Paolo CAPPÀ.

2009              Master  
Biomedical Engineering *cum laude*, Sapienza University of Rome, Italy.

### SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS

2015 - Present      2 Postdoc, 5 PhD Students, 39 Master Students  
Department of Mechanical and Aerospace Engineering, Sapienza University of Rome, Italy.

2014 - 2015        1 Master Student  
Department of Mechanical and Aerospace Engineering, New York University, Tandon School of Engineering, NY, USA.

2010 - 2013        4 Master Students  
Department of Mechanical and Aerospace Engineering, Sapienza University of Rome, Italy.

## TEACHING ACTIVITY

Present	Teacher - Biomechanics Course, Sapienza University of Rome, Italy. Teacher - Measurements for Mechanical Systems and Industry Course, Sapienza University of Rome, Italy.
2010 - 2013	Lecturer – Measurement of Torque (Seminar), Sapienza University of Rome, Italy.
2010 - 2013	Lecturer - Measurement of human body kinematics and kinetics (Seminar), Sapienza University of Rome, Italy.
2010 - 2013	Lecturer - Use of inertial sensors in Biomechanics (Seminar), Sapienza University of Rome, Italy.

## ORGANIZATION OF SCIENTIFIC MEETINGS

2020	Tutorial Chair for IEEE International Workshop on Metrology for Industry 4.0 and IoT (Online)
2018	Session Chair for IEEE International Symposium on Measurements for Medical Application (MeMeA) 2018 , Rome, Italy

## INSTITUTIONAL RESPONSIBILITIES

2016 - Present	Member of the Committee of the PhD school in Industrial Engineering and Production, DIMA, Sapienza University of Rome, Italy.
2016 - Present	Responsible Person for the Double Degree Master Programs in Mechanical Engineering with NYU Tandon School of Engineering and Georgia Institute of Technology, Sapienza University of Rome, Italy.

## MEMBERSHIPS OF SCIENTIFIC SOCIETIES

2018 - Present	Chair of Technical Committee for IMUs in the “IEEE Sensor Council, Italy Chapter”
2018 - Present	Member IEEE, IEEE IMS.

## PEER REVIEWING FOR INTERNATIONAL JOURNALS

Computers in Human Behavior, Gait & Posture, IEEE Robotics and Automation Magazine, IEEE Signal Processing Letters, IEEE Transactions on Mechatronics, Journal of Medical Robotics Research, Measurements, Measurement Science and Technology, Measurement Science Review, Mechatronics, Neuroscience Letters, Physiological Measurement, Sensors, Shock and Vibration, European Journal of Physical and Rehabilitation Medicine.

## MAIN RESEARCH GRANTS

January 2020 - Ongoing	International BE_FOR_ERC from Sapienza (50k€) for project WAINOT. <b>Duration:</b> 12 months. <b>Role:</b> PI
December 2019 - Ongoing	National BRIC 2019_37 from INAIL (ca. 300k€) for project: “SIDE-Simulated Dynamics Exoskeleton”. <b>Duration:</b> 24 months, <b>Role:</b> PI.
2016 - 2017	European Grant FP7 MD-PAEDIGREE (ca. 400k€), as a substitute Local PI

## INDUSTRIAL COLLABORATIONS

May 2020 – Ongoing	<b>ABB S.p.a.</b> Development of an automatic setup for calibrating bimetallic strips in circuit breakers.
October 2019 – Ongoing	<b>CoRehab S.r.l.</b> Development of an algorithm for measuring stride length from IMU sensors data.
November 2013 – May 2014	<b>EuroLink Systems S.r.l.</b> Design of military-grade recognition vehicles.



## PATENTS

2018	Italian Patent n. 102017000062668: “Process and device for detecting race walking condition during race walking of an athlete.”
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2019 Italian Patent n. 102019000003657: “Design and development of an FBG-based artificial skin for application to collaborative robotics.”

#### AWARDS

2014 Awarded Best Student Ever of the PhD School of Sapienza University of Rome in Industrial Production Engineering.

#### INVITED TALKS

2018 Berlin School of Movement Science (BSMS) 2018. Invited lecturer on: “Muscle synergies in neurodegenerative diseases and rehabilitation.”

2019 Summer School of Information Engineering, Bressanone (BZ). Invited lecturer on: “A Machine Learning approach for analyzing human motion activities using data from wearable sensors.”

#### PUBBLICATIONS

Complete list at: <http://orcid.org/0000-0002-3213-8261>

