

# CURRICULUM VITAE

<b>Name and surname:</b>	Domenico Formica
<b>Date of birth:</b>	18/11/1980
<b>Nationality:</b>	Italian
<b>Current position:</b>	<i>Associate Professor in Industrial Bioengineering</i>
<b>Current hosting institute:</b>	Università Campus Bio-Medico di Roma (UCBM)
<b>Laboratory/ Department:</b>	Unit of Neurophysiology and Neuroengineering of Human-Technology Interaction, Department of Medicine
<b>Address:</b>	Via Alvaro del Portillo, 21
<b>ZIP code, city, country:</b>	00128, Rome (RM), Italy
<b>Lab Phone:</b>	+39-0622541-9463/8885
<b>Researcher unique identifiers:</b>	SCOPUS ID: 6507972203 ORCID ID: 0000-0003-0240-1265 RESEARCHERID: G-9403-2011 Google Scholar: <a href="#">link</a>
<b>E-mail:</b>	<a href="mailto:d.formica@unicampus.it">d.formica@unicampus.it</a>

## ***Research Interests:***

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- *Robotic and mechatronic technologies with application to neuroscience, with particular attention to neurodevelopment of children from birth onwards.*
- *Study of human sensorimotor control, focusing on the simplifying motor strategies adopted by the brain to perform redundant tasks.*
- *Design and validation of quantitative algorithms for clinical assessment of patients with neuromuscular disorders.*
- *Design and development of novel robotic devices for rehabilitation motor therapy after neurological injury, with special attention to the issue of interaction control, and clinical validation of the developed solutions.*

## ***Education:***

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### *PhD:*

**February 2008:** I received the PhD degree in biomedical engineering from “Università Campus Bio-Medico di Roma”, Italy.

Phd Thesis: “*Novel Approaches to Functional Assessment and Interaction Control for Robot-aided Neurorehabilitation*”.

*Supervisor:* Prof. Eugenio Guglielmelli; *Co-supervisors:* Dr. Loredana Zollo, Prof. Paolo Maria Rossini.

### *Laura Degree:*

**December 2004:** I received the "Laurea Magistrale" Degree (equivalent to MS) Summa Cum Laude in Biomedical Engineering from "Università Campus Bio-Medico di Roma", Italy.

Laurea Degree Thesis: "A bio-inspired approach for regulating compliance in systems for robot-assisted rehabilitation motor therapy".

Supervisor: Prof. Eugenio Guglielmelli; Co-Supervisor: Dr. Loredana Zollo.

**October 2002:** I received the "Laurea" Degree (equivalent to BSc) Summa Cum Laude in Biomedical Engineering from "Università Campus Bio-Medico di Roma", Italy.

Laurea Degree Thesis: "An Overview on Biological Effects Related to Magnetic Resonance Systems Exposure".

Supervisor: Prof. Sergio Silvestri.

## ***Professional Experience:***

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*June 2020 – present:*

**Associate Professor in Industrial Bioengineering** (SSD: ING-IND/34) at the School of Engineering, Università Campus Bio-Medico di Roma, Italy.

*July 2017 – June 2020:*

**Tenure-track Assistant Professor in Industrial Bioengineering** (RTD-b L. 240/2010, SSD: ING-IND/34) at the School of Engineering, Università Campus Bio-Medico di Roma, Italy.

*June 2016 – present:*

**Co-founder & Co-Director of the Research Unit of Neurophysiology and Neuroengineering of Human-Technology Interaction (NEXT)** at the Università Campus Bio-Medico di Roma, Italy.

*August 2018:*

**Visiting professor** at the Human Robotics Group, Bioengineering Department, Imperial College London.

*2014 – 2018:*

**Visiting scientist** at the School of Mechanical & Aerospace Engineering, Division of Mechatronics & Design, Nanyang Technological University, Singapore.

*April 2017:*

**National Habilitation for the role of Associate Professor** (SC: 09/G2 - Bioengineering).

*December 2010 – December 2016*

**Assistant Professor in Industrial Bioengineering** (RTD L. 230/2005, SSD: ING-IND/34) at the School of Engineering, Università Campus Bio-Medico di Roma, Italy.

*March 2008 – November 2010:*

**Post-doc Fellow** (Assegno di Ricerca, SSD: ING-IND/34) at the Laboratory of Biomedical Robotics and Biomicrosystems, Università Campus Bio-Medico di Roma, Italy.

*May 2007 – November 2007:*

**Visiting Student** at the *Newman Laboratory for Biomechanics and Human Rehabilitation*, Department of Mechanical Engineering, Massachusetts Institute of Technology, Cambridge (MA). I joined the group of Prof. Hogan and Dr. Krebs and worked on new robot-based algorithms for quantitative estimation of the wrist joint stiffness in patients with neurological injuries.

## ***Teaching Experience:***

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*November 2010 – present:*

**Coordinator** of the “Bionic Systems and Neuroengineering” class at the *School of Engineering*, Università Campus Bio-Medico di Roma, Italy.

*November 2018 – present:*

**Coordinator** of the “Mechatronics for Biomedical Systems” class at the *School of Engineering*, Università Campus Bio-Medico di Roma, Italy.

*March 2012 – June 2018:*

**Coordinator** of the “Laboratory of Bio-engineering” class at the *School of Engineering*, Università Campus Bio-Medico di Roma, Italy.

*September 2017 – June 2018:*

**Coordinator** of the “Biodesign” class at the *School of Engineering*, Università Campus Bio-Medico di Roma, Italy.

*November 2011 – June 2018:*

**Lecturer** of the “Biomechatronics” class at the *School of Engineering*, Università Campus Bio-Medico di Roma, Italy.

*September 2008 – October 2010:*

**Tutor/Teaching Assistant** of the “Neuroengineering” class at the *School of Engineering*, Università Campus Bio-Medico di Roma, Italy.

*September 2007 – 2009:*

**Tutor/Teaching Assistant** of the “Anatomy and Physiology” class at the *School of Engineering*, Università Campus Bio-Medico di Roma, Italy.

## ***Fellowships and Awards:***

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**2020 – to date** Coordinator of the EU project **CONBOTS - CONnected through roBOTS: physically coupling humans to boost handwriting and music learning** (H2020-ICT-09-2019-2020 #871803, Total budget: 4.8 M€; DF's Research Unit budget: 1.2 M€).

- 2020 – to date** PI of the EU project **NIMA: Non-invasive Interface for Movement Augmentation** (H2020-FETOPEN-01-2018-2019-2020 #899626, Total budget: 3 M€; DF's Research Unit budget: 500 k€).
- 2014 – 2018** Co-PI of the PDI meter research project, an early career grant awarded by the Italian Ministry Health under the “Ricerca Finalizzata - Giovani Ricercatori” program for “young researchers” (Total budget: 340000 €; DF's Research Unit budget: 100000 €).
- 2014 – 2018** H-MAN project: Two weeks per year as visiting scientist at the School of Mechanical & Aerospace Engineering, Division of Mechatronics & Design, Nanyang Technological University, Singapore (Total budget: 1100000€; DF's Travel expense budget: 18000 €).
- 2015** ERC starting Grant 2015: ENCODE project has received the panel score "A: Fully meets the ERC's evaluation criteria, and is considered as a fundable proposal" (not funded for budget limitations).
- 2010 – 2014** Co-PI of the TOUM project, an early career grant awarded by the Italian Ministry of Education, University and Research under the “FIRB - Futuro in Ricerca” program for “young researchers” (Total budget: 605000€; DF's Research Unit budget: 314000 €).
- 2007 – 2007** Six months as visiting student at the Newman Laboratory for Biomechanics and Human Rehabilitation, Department of Mechanical Engineering, Massachusetts Institute of Technology, Cambridge (MA), within the MOTHER project for staff exchange, funded by the Italian Ministry of Education, University and Research.

### ***Supervision of students and postdoctoral fellows:***

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- 2012 – to date** Member of the Scientific Board of the PhD Program in “Science and Engineering for Humans and the Environment” of the Università Campus Bio-Medico di Roma.
- 2012 – 2018** Supervision/co-supervision of 3 PhD students in Biomedical Engineering: Dr. Luca Ricci (currently Software Engineer at Facebook, AR/VR), Dr. Eleonora Tamilia (currently Instructor at Harvard Medical School & Boston Children Hospital) and Jacopo Tosi (Senior Research Engineer at Heaxel s.r.l.). During their PhD, the supervised PhD candidates have co-authored 9 papers on ISI journals and 10 papers on peer-reviewed international conferences. Moreover, Eleonora Tamilia has been awarded with the second place of the "best student paper competition" at the 37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2015), Milan, Italy, 2015.
- 2008 – 2019** Supervision of 30+ master and 30+ bachelor theses from the School of Engineering, Università Campus Bio-Medico di Roma, Italy. Several of these led to peer-reviewed publications, co-authored by the supervised students (i.e. Donadio et al., PLoSOne 2018; Rosi et al., J Sensors 2016; Ciocchetti et al., Biosensors 2015; Giorgino et al., IEEE Sensors 2014; Tagliamonte et al., Adv Rob 2011; Pennimpede et al., EMBC 2013; Merone et al. NER 2013; Tagliamonte et al., IROS 2010; Scordia et al. BIOROB 2010).

*Current supervised PhD student:*

- **Ms. Alessia Noccaro** (from 2016), who is working at developing a robot-assisted Transcranial Magnetic Stimulation (TMS) platform, in order to enhance neuromodulation protocols for patients with neurological injuries.
- **Mr. Luigi Raiano** (from 2017), who is working at the design of a mechatronic wrist exoskeleton for at home motor evaluation of Parkinson's Disease.
- **Mr. François Le Jeune** (from 2018), who is working at the design of a robotic VR platform for the study of the embodiment of hand prostheses and supernumerary robotic limbs.

### ***Main Attended Projects:***

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- October 2020 – September 2023: NIMA project - NIMA: Non-invasive Interface for Movement Augmentation (funded by the H2020-FETOPEN-01-2018-2019-2020 call, grant number #899626).
  - *Role in the project:* PI of the UCBM partner unit.
  - *Project objectives:* The overall project goal is to allow humans to perform tasks that are impossible to achieve with the natural limbs alone, by providing the possibility to embody and control wearable supernumerary limbs, surgical devices, and computers or mobile devices, voluntarily and independently of natural limbs.
  - *Contribution to the project:* I will coordinate the activities of the UCBM research team. In particular, I will supervise the activities related to development of new methods and tools to improve sensory feedback and embodiment of supernumerary robotic limbs.
  - *Overall funding:* 3.000.000 €.
  - *DF's research unit funding:* 500.000 €.
- January 2020 – June 2023: CONBOTS project - CONnected through roBOTS: physically coupling humans to boost handwriting and music learning (funded by the EU/H2020 ICT-09-2019-2020 call, grant number #871803).
  - *Role in the project:* Project Coordinator and PI of the UCBM partner unit.
  - *Project objectives:* The overall project goal is to design and test a new class of robots, the CONBOTS, which physically couple people to facilitate learning of new motor skills. The CONBOTS will be applied in two different learning contexts, for training graphomotor skills in children learning handwriting, and for augmenting learning performance in beginner musicians.
  - *Contribution to the project:* I will coordinate the whole project. Moreover, as PI of the UCBM research team, I will supervise the activities related to the design and development of the wearable system for monitoring subjects' physiological parameters, to the integration of the CONBOTS platform, and to the experimental validation of the platform to improve handwriting learning.
  - *Overall funding:* 4.800.000 €.
  - *DF's research unit funding:* 1.200.000 €.
- November 2020 – October 2022: SMiLe project - Sistema indossabile di Monitoraggio di parametri fisiologici per il benessere della persona e la prevenzione di malattie Lavoro-correlate (funded by Regione Lazio, POR FESR LAZIO 2014-2020).
  - *Role in the project:* PI of the UCBM partner unit.

- *Project objectives:* The overall project goal is to develop and test a wearable system for monitoring physiological parameters, physical activities and posture in sport and working scenarios.
- *Contribution to the project:* I will coordinate the activities of the UCBM research team. In particular, I will supervise the design of a wearable device based on Inertial Measurement Units (IMU) integrated with acoustic sensors for monitoring the respiratory frequency, the physical activity and posture, and for the detection of the heart rate.
- *Overall funding:* 325.000 €.
- *DF's research unit funding:* 122.000 €.
- April 2019 – April 2022: **MONREAB project** - Piattaforma per il monitoraggio del processo riabilitativo (funded by Fondazione G.B. Baroni).
  - *Role in the project:* co-PI.
  - *Project objectives:* The project aims at designing and testing smart wearable garments for continuous monitoring of the patients' motion and for providing feedbacks during the rehabilitation process.
  - *Contribution to the project:* I'll be involved in developing algorithms for assessing patient's movements and in designing the device which will be used to provide vibrotactile feedbacks.
  - *Overall funding:* 300.000 €.
- April 2019 – April 2021: **SENSE-RISC project** - Sviluppo di abiti intelligenti sensorizzati per prevenzione e mitigazione di rischi per la sicurezza dei lavoratori (funded by the Italian National Institute for Insurance against Accidents at Work – INAIL).
  - *Role in the project:* co-PI.
  - *Project objectives:* The project aims at designing and developing wearable devices for continuous monitoring of the workers' during work activities.
  - *Contribution to the project:* I'll be involved in developing sensors and algorithms for monitoring workers' posture and motor activities.
  - *Overall funding:* 1.000.000 €.
- April 2019 – April 2021: **HOPE project** - HOspital to the PatiEnts (Internal Grant of the Università Campus Bio-Medico di Roma).
  - *Role in the project:* co-PI.
  - *Project objectives:* The project aims at designing and developing wearable devices for continuous monitoring of vital signs. The system will be used to optimize patient's habits during activities of daily living for improving the outcomes of low back pain rehabilitation.
  - *Contribution to the project:* I'll be involved in developing sensors and algorithms for monitoring patient's posture and motor activities.
  - *Overall funding:* 60.000 €.
- December 2014 – December 2018: **PDmeter project** - Daily at-home follow-up of Parkinson's Disease patients motor performance through robotic and portable devices (Young Researcher grant by Italian Ministry of Health, n. GR-2011-02352674).
  - *Role in the project:* co-PI and team leader of the UCBM engineering research group.
  - *Project objectives:* The project aims at setting up a novel mechatronic wearable device, the PDmeter, providing a reliable at-home assessment

- of motor performance of Parkinson Disease patients, allowing a better therapeutic approach and savings in healthcare expenses.
- *Contribution to the project:* I will coordinate the design and development of the experimental setup based on robotic devices and magneto-inertial wearable sensors for the assessment of PD patients motor performance.
  - *Overall funding:* 340.000 €.
  - *DF's research unit funding:* 99.000 €.
- September 2013 – March 2018: Refinement and Clinical Evaluation of the H-Man: a novel, portable, inexpensive planar robot for arm rehabilitation after stroke (Bedside & Bench Grant Call, Biomedical Research Council & National Medical Research Council of Singapore).
    - *Role in the project:* Overseas Collaborator.
    - *Project objectives:* The aim of this project is to assess to what extent an inexpensive robotic interface recently designed and developed at NTU, named 'H-Man', is suitable for rehabilitation purposes using a feasibility pilot clinical trial design involving stroke survivors.
    - *Contribution to the project:* I collaborate on the development of the adaptive strategies that modify impedance control parameters during Human-Robot interaction.
    - *Overall funding:* reimbursement of travel expenses to Singapore.
  - December 2010 - May 2014: TOUM project - The Other Understanding in Movement: gesture analysis in children with autism using non-obtrusive wearable technologies (MIUR/FIRB, n. RBFR086HEW).
    - *Role in the project:* co-PI and team leader of the UCBM research group.
    - *Project objectives:* Main purpose of the TOUM project is to analyse motor behaviour during gesture production, in children with typical development (TD) and in children with autistic spectrum disorders (ASD), by using novel non-obtrusive wearable technologies.
    - *Contribution to the project:* I coordinate the design and the experimental validation of the platform based on wearable magneto-inertial sensors for the analysis of gestures in children.
    - *Overall funding:* 495.500 €.
    - *DF's research unit funding:* 255.000 €.
  - May 2009 – April 2013: IM-CLeVeR project - Intrinsically Motivated Cumulative Learning Versatile Robots (FP7-EU-ICT 2008 contract n. 231722).
    - *Role in the project:* WP Leader.
    - *Project objectives:* The project aims at developing a new methodology for designing robots controllers that can: (1) cumulatively learn new efficient skills through autonomous development based on intrinsic motivations, and (2) reuse such skills for accomplishing multiple, complex, and externally-assigned tasks.
    - *Contribution to the project:* I coordinated the design and development of a mechatronic board, which has been used to comparatively study intrinsic motivation and cumulative learning in children and in capuchin monkeys.
    - *Overall funding:* 5.899.884 €.
  - March 2008 – December 2008: TACT project - Thought in ACTION (FP6-EU-NEST-ADVENTURE 2005 contract n. 15636).
    - *Role in the project:* R&D as post-doc.

- *Project objectives:* Project aim is to develop non-obtrusive, user-friendly technological platforms and methods allowing the extraction of more information from infant movement than currently possible. The key idea is to analyze different goal-directed actions that are typically performed by infants, using instrumented toys that are constructed to sense and record kinematic parameters, as the baby plays with the toys.
- *Contribution to the project:* I designed an instrumented "block box" toy (sorting shape toy), equipped with wireless IMU sensors, in order to assess spatial cognition in infants.
- *Overall funding:* 1.999.442 €.
- January 2006 – December 2007: **MOTHER project** - MOtor-Therapy mEdiated By Robotic technology (INTELINK/MIUR research programme)
  - *Role in the project:* R&D as PhD student.
  - *Project objectives:* The project aim at promoting a joint research program between UCBM and the Department of Mechanical Engineering at MIT (Cambridge, MA) on clinical application of robot-aided motor therapy, measurement of visco-elastic properties in the human arm, neuro-computational model of motor learning.
  - *Contribution to the project:* I worked on new robot-based algorithms for quantitative estimation of the wrist joint stiffness, and tested them on healthy subjects and on post-stroke chronic patients.
  - *Overall funding:* 48.000 €.
- November 2004 – November 2007: **NEUROBOTICS project** - The fusion of NEUROscience and roBOTICS (FP6- EU-IST-FET 2003 contract n. 001917).
  - *Role in the project:* R&D as PhD student.
  - *Project objectives:* The project aims at developing three main categories of hybrid bionic systems for human augmentation featuring different levels of hybridness (i.e. mechanical coupling with the human body) and of connectivity (to the human nervous system): (i) biomimetic scalable artefacts to be remotely controlled by a human operator; (ii) intelligent wearable artefacts loosely physically coupled with the human body; (iii) arm hand sub-systems tightly physically coupled with the human body.
  - *Contribution to the project:* I worked on the design of new algorithms for controlling physical human-robot interaction during robot-aided rehabilitation of post-stroke patients.
  - *Overall funding:* 5.640.000 €.

### ***Commissions of trust:***

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2021	Technical Program Chair, The 2021 IEEE International Workshop on Metrology for Industry 4.0 and IoT, Rome, Italy, 2021.
2020	Publication Chair, The 2020 IEEE International Workshop on Metrology for Industry 4.0 and IoT, Rome, Italy, 2020.
2019 – to date	Section Board Member of Sensors (MDPI), Associate Editor for Biomedical Sensors.
2015 – to date	Scientific Program Committee, Associate Editor, International Conference on Rehabilitation Robotics (ICORR).
2006 – to date	Member of IEEE, of the Robotic and Automation Society (RAS), of the Engineering in Medicine and Biology Society (EMBS).



2018 – 2019	Conference Review Board, Associate Editor, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).
2018	Senior Member of the IEEE
2017	Organizing Committee, Junior Program Chair, IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN).
2017	Program Committee, Junior Program Chair & Associate Editor, IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN).
2017	Co-chair of the Plenary Session “Lower limb rehabilitation robotics” at the “15th IEEE Conference on Rehabilitation Robotics (ICORR 2017)”, London, UK.
2013 – 2015	Editorial Board, Associate Editor, IEEE/RAS International Conference on Robotics and Automation (ICRA).
2012 – 2016	Editorial Board, Associate Editor, IEEE/RAS-EMBS International Conference on Biomedical Robotics and Biomechanics (BIOROB).
2012	Conference Review Board, Associate Editor, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).
2012	Local Committee, The Fourth IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechanics (BIOROB 2012), Rome, Italy, 2012.
2006 – to date	Reviewer for several scientific International journals, among others: IEEE Transactions on Robotics, IEEE/ASME Transactions on Mechatronics, IEEE Transactions on Neural Systems and Rehabilitation Engineering, IEEE Transactions on Haptics, Frontiers in Human Neuroscience, Journal of Biomechanics.
2006 – to date	Reviewer for several prestigious international Conferences, among others: IEEE-ICRA, IEEE/RSJ-IROS, IEEE-EMBC, IEEE-BIOROB, IEEE-ICORR.

### ***Invited talks:***

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- 2020 Jun 5 – "Technologies 4.0 for biomedical applications in everyday life scenarios", Keynote speaker, 2020 IEEE MetroInd4.0&IoT (MetroInd 2020), Rome, Italy.
- 2019 Dec 20 – "Neuroengineering: an engineering approach to neuroscience", seminar at the Department of Electronic Engineering, University of York, UK.
- 2019 Dec 13 – "Un approccio ingegneristico allo studio del controllo motorio umano: tecnologie, metodi e possibili applicazioni cliniche", Workshop “Quale Tecnologia per Quale Riabilitazione” (II edition), December 12-14 2019, Rome, Italy.
- 2019 Oct 22 – "Robotics for Neuroscience and Neuroscience for Robotics: From Human Motor Control to Human-Robot Interaction in Education 4.0", seminar at the Department of Industrial Engineering, University of Trento.
- 2019 Jun 24 – "Technologies and methods for quantitative assessment of brain pathologies: application to Stroke and Parkinson Disease", Workshop on Neurorehabilitation after cognitive and motor impairment, 16<sup>th</sup> IEEE

International Conference on Rehabilitation Robotics (ICORR 2019), Toronto, Canada.

- 2018 Aug 17 – "The stiffness of the wrist in Parkinson's Disease patients and healthy controls", seminar at the Human Robotics Group, Bioengineering Department, Imperial College London.
- 2018 Jul 31 – "Neuroengineering: an engineering approach to neuroscience", lecture at the Summer School "The human being behind the man: the cyborg", Wien, Austria.
- 2017 Oct 26 – "Neurofisiologia e Neuroingegneria dell'interazione Uomo Tecnologia", seminar at the SEFIR school titled "L'interazione naturale-artificiale negli ambiti scientifico-tecnico e speculativo", Perugia, Italy.
- 2017 Jul 17 - "The stiffness of the wrist in Parkinson's Disease patients and healthy controls", Workshop on Mechanical Impedance and its Role in Rehabilitation, 15<sup>th</sup> IEEE International Conference on Rehabilitation Robotics (ICORR 2017), London, UK.
- 2016 Feb 12 - "Mito e realtà dell'uomo bionico: le indefinibili frontiere della bioingegneria", Seminar at the Public Library of Rieti, Rieti, Italy.
- 2014 Jul 2 - "Neural and Neurodevelopmental engineering: an engineering approach to neuroscience", presentation at the "Research Day 2014", Università Campus Bio-Medico di Roma, Rome, Italy.
- 2013 Nov 22 - "The Other Understanding in Movement (TOUM) Project: using body-worn sensors to capture motor and communicative behaviours in autism spectrum disorders", presentation at the International Symposium on Perception and Action in Early Development (PAED 2013), Rome, Italy.
- 2013 Jan 30 - Seminar at the Human Robotics group, Department of Bioengineering, Imperial College of London, London, UK.
- 2012 Oct 25 - "A mechatronic platform for empirical experiments on intrinsic motivations and skill acquisition: experiments with children", Seminars series on intrinsic motivations and cumulative learning, National Research Council (CNR), Rome, Italy.
- 2010 Nov 26 - "Sensor-based technology to assess infant movement", Workshop on Motor Babbling in Human Development, Università Campus Bio-Medico di Roma, Rome, Italy.
- 2010 June 30 - "Redundancy and Intrinsic Constraints: Application to Wrist Movements and Effects on Rehabilitation Robotics", seminar at Università Campus Bio-Medico di Roma, Rome, Italy.
- 2007 May 21 - Seminar at the Newman Laboratory for Biomechanics and Human Rehabilitation, Department of Mechanical Engineering, Massachusetts Institute of Technology, Cambridge (MA), USA.

### ***Presentations at International Conferences\*:***

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- Poster presentation [C18] at the 16th IEEE International Conference on Rehabilitation Robotics (ICORR 2019).
- Podium presentation [C19] at The II Workshop on Metrology for Industry 4.0 and IoT (MetroInd4.0&IoT 2019).
- Podium presentation [C28] at the 2018 IEEE International Symposium on Medical Measurements and Applications (MeMeA 2018).

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\* For references, please refer to the publication list

- One podium [C41] and one poster [C42] presentation at the 36th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2014).
- One podium [C47] and two poster [C48]-[C49] presentations at the 35th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2013), Osaka, Japan.
- Podium presentation [C50] at the 4th IEEE/RAS-EMBS International Conference on Biomedical Robotics and Biomechatronics (BIOROB 2012), Rome, Italy.
- Two poster presentations [C54]-[C55] at the 33rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2011), Boston, USA.
- Poster presentation [C59] at the 4th International IEEE/EMBS Conference on Neural Engineering (NER 2009), Antalya, Turkey.
- Podium presentation [C62] at the 2008 IEEE International Conference on Robotics and Automation (ICRA 2008), Pasadena, USA.

### ***Institutional Responsibilities:***

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| 2018 – to date | Member of the AQD (Quality Assurance for Teaching Activities) committee for the Master Degree in Biomedical Engineering, School of Engineering, Università Campus Bio-Medico di Roma, Italy. |
| 2012 – 2014    | Responsible of tutoring service for master students at the School of Engineering, Università Campus Bio-Medico di Roma, Italy.   |

### ***Known Languages:***

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- Italian (native language)
- Fluent English

### ***Technical Skills:***

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#### *Software Languages:*

C/C++, TCL/TK, basic knowledge of Assembler.

#### *Scientific Tools:*

MATLAB/Simulink/SimMechanics, SolidWorks, EAGLE PCB Software, PIC microController environment (PICC by CCS, Inc.).

### ***List of Publications:***

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#### *Theses:*

- PhD Thesis: “Novel Approaches to Functional Assessment and Interaction Control for Robot-aided Neurorehabilitation”.
- Second Level Laurea Degree Thesis: “A bio-inspired approach for regulating compliance in systems for robot-assisted rehabilitation motor therapy”.
- First Level Laurea Degree Thesis: “An Overview of Biological Effects Related to Magnetic Resonance Systems Exposure”.

*International Journal papers:*

- [J1] A. Nocco, A. Mioli, M. D'Alonzo, M. Pinardi, G. Di Pino, D. Formica, "Development and validation of a novel calibration methodology and control approach for robot-aided Transcranial Magnetic Stimulation (TMS)", *IEEE Transactions on Biomedical Engineering*, (conditionally accepted – III review), 2021.
- [J2] L. Raiano, J. Di Tocco, C. Massaroni, G. Di Pino, E. Schena, D. Formica, "A PCA-based method to select the number and the body location of piezoresistive sensors in a wearable system for respiratory monitoring", *IEEE Sensors Journal*, 2021, *in press*.
- [J3] D. Lo Presti, C. Massaroni, J. Di Tocco, R. Sabbadini, M. Zaltieri, A. Carnevale, G. U. Longo, M. A. Caponero, R. D'Amato, E. Schena, D. Formica, "A Magnetic Resonance-compatible wearable device based on functionalized fiber optic sensor for respiratory monitoring", *IEEE Sensors Journal*, 2021, *in press*.
- [J4] J. Di Tocco, R. Sabbadini, L. Raiano, F. Fani, S. Ripani, E. Schena, D. Formica, C. Massaroni, "Breath-Jockey: Development and Feasibility Assessment of a Wearable System for Respiratory Rate and Kinematic Parameter Estimation for Gallop Athletes", *Sensors*, vol. 21 (1):152, 2021.
- [J5] D. Lo Presti, S. Dall'Orso, S. Muceli, T. Arichi, S. Neumane, A. Lukens, R. Sabbadini, C. Massaroni, M. A. Caponero, D. Formica, E. Burdet, E. Schena, "An fMRI Compatible Smart Device for Measuring Palmar Grasping Actions in Newborns", *Sensors*, vol. 20 (21):6040, 2020.
- [J6] M. Carassiti, R. Cataldo, D. Formica, C. Massaroni, A. De Filippis, P. Palermo, J. Di Tocco, R. Setola, C. Valenti, E. Schena, "A new pressure guided management tool for epidural space detection: feasibility assessment in a clinical scenario", *Minerva Anestesiologica*, vol. 86 (7), pp. 736-741, 2020.
- [J7] G.-H. Phan, C. Hansen, P. Tommasino, A. Hussain, D. Formica, D. Campolo, "A complementary filter design on SE(3) to identify micro-motions during 3D motion tracking", *Sensors*, vol. 20 (20): 5864, 2020.
- [J8] M. Zaltieri, C. Massaroni, D. Lo Presti, M. Bravi, R. Sabbadini, S. Miccinilli, S. Sterzi, D. Formica, E. Schena, "A Wearable Device Based on a Fiber Bragg Grating Sensor for Low Back Movements Monitoring", *Sensors*, vol. 20 (14):3825, 2020.
- [J9] L. Raiano, G. Di Pino, L. di Biase, M. Tombini, N.L. Tagliamonte, D. Formica, "PDMeter: A Wrist Wearable Device for an at-home Assessment of the Parkinson's Disease Rigidity", *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, vol. 28 (6), pp. 1325-1333, 2020.
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- [J11] M. D'Alonzo, A. Mioli, D. Formica, G. Di Pino, "Modulation of Body Representation Impacts on Efferent Autonomic Activity", *Journal of Cognitive Neuroscience*, vol. 32 (6), pp. 1104-1116, 2020.
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**Rome, 22/01/2021**

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