PERSONAL INFORMATION	Giovanni Mottola

Birth date: 10/08/1990 City of birth: Bologna (BO), Italia
Phone: 340–2731224 Mail: giovanni.mottola@unime.it
Gender: Male Citizenship: Italian

Address: Via dei Carrettieri, 11/2, 40134, Bologna (BO), Italy
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CURRENT POSITION	University of Messina
02/12/2024 – present	**Tenure-track researcher (assistant professor)** Department of Engineering Research topic: Parallel robots and vibrations in metamaterials

PREVIOUS EXPERIENCE	
01/03/2023 – 01/12/2024	**Assistant professor (fixed-term)** DIBRIS – University of Genoa (SSD ING-INF/05) Research topic: Smart drones and sensors for port inspection and monitoring (project RAISE, supported by EU PNRR funds)
16/03/2020 – 28/02/2023	**Contract researcher** DISMI – University of Modena and Reggio Emilia (SSD ING-IND/13) Research topic: Algorithms for diagnosis of hydraulic systems Industrial partner: GB ServiceLab S.r.l.
01/02/2019 – 31/01/2020	**Contract researcher** Alma Mater Studiorum – University of Bologna (SSD ING-IND/13) Research topic: Analysis and dimensioning of gear reducers Industrial partner: Sampingranaggi S.r.l.
01/11/2015 – 29/03/2019	**PhD student** Alma Mater Studiorum – University of Bologna (SSD ING-IND/13) Research topic: Dynamics of Cable-Driven Parallel Robots (CDPRs) Thesis title: Dynamically Feasible Trajectories of Fully-Constrained Cable-Suspended Parallel Robots Final grade: honors
01/05/2015 – 31/10/2015	**Contract researcher** Alma Mater Studiorum – University of Bologna (SSD ING-IND/13) Research topic: Automated systems for home appliance doors Industrial partner: Nuova Star S.p.a.

EDUCATION AND TRAINING

28/08/2012 – 17/03/2015	**Master's degree in Mechanical Engineering**	110/110 (hon.)
	Alma mater: University of Bologna Industrial partner: IMA S.p.A. Title: Electromechanical modeling of an automated capsule filling machine	
17/09/2008 – 17/07/2012	**Bachelor's degree in Mechanical Engineering**	100/110
	Alma mater: University of Bologna Title: FEM structural analysis of a component for a fatigue testing machine with Aster/Salomè	

PERSONAL SKILLS

Mother tongue	Italian				
Other languages	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Interaction	Production	
English	C1	C1	C1	C1	C1
	CILTA certification (University of Bologna language courses)				
French	A2	A2	A2	A2	A2
	DELF certification (A2 level)				
Job-related skills	Experience with CAD software such as SolidEdge, SolidWorks, Inventor and CREO (the latter especially with the Mechanism module for multibody simulation), mechatronics simulation (AMESim, Simulink), CAM (Cimatron), FEM (ANSYS, Salomè-Meca), multibody simulation (ADAMS/ProjectChrono), robot control (RTLab, ROS, CoppeliaSim) and gear dimensioning (KISSsoft).				
Digital competence	Advanced command of MS Office suite. Advanced command of MATLAB/Mathematica/LabVIEW/Python. Programming experience with C, C++ and Fortran; working knowledge of GitHub and Visual Studio Code. Advanced command of LaTeX.				

OTHER ACTIVITIES	
Teaching	Tutor for course "MECHANICS OF ROBOTS M" (c. 34303, SSD ING-IND/13), Master's degree courses in Automation Engineering and in Mechanical Engineering (A.Y. 2015/2016), Uni. of Bologna (30 hours) Tutor for course "MECHANICS OF MACHINES T-A" (c. 28661, SSD ING-IND/13) for Bachelors' course in Management Engineering (A.A. 2016/2017, 2017/2018, 2018/2019, 2019/2020, 2020/2021 and 2021/2022), at University of Bologna (20 hours) Contract lecturer for the course "FUNDAMENTALS OF MECHANICS OF MACHINES T-2 (O-Z) (Module 2)" (c. 28523, SSD ING-IND/13) for Bachelor's course in Automation Engineering (A.A. 2020/2021 and 2021/2022), at University of Bologna (40 hours) Teaching assignment at the "CIS - School for Enterprise Management" group (Reggio Emilia), plan financed by Fondimpresa, for course "Predictive maintenance: structured approach to machine maintenance" (code 2697655), 10 hours (March to June 2022) Professor at the University of Messina: "Foundations of robotics" (c. A001283, SSD ING-IND/13, B.S. in Biomedical Engineering, A.Y. 2024/2025, 48 hours) and "Robotics" (c. A001538, SSD ING-IND/13, M.S. in Mechanical Engineering, A.Y. 2025/2026, 72 hours)
Invited seminars	Seminar on own research work (invited by Prof. Damiano Zanotto) at Stevens Institute of Technology (Hoboken, USA), 10/11/2017 Seminar on own research work (invited by Prof. Sunil Agrawal) at Columbia University (New York, USA), 15/11/2017 Seminar on own research work (invited by Prof. Giulio Sandini) at Italian Institute of Technology (Genoa, Italy), 06/05/2019 Seminar on own research work (invited by Fondazione REI and Club Meccatronica) at Tecnopolo di Reggio Emilia (Italy), 01/10/2020 Seminar on own research work (invited by "Associazione Clust-ER Meccatronica e Motoristica") at Dallara Academy (Varano de' Melegari, Italy), 09/07/2021 Seminar on own research work (during the MRS Summer School organized by IEEE RAS) at Czech Technical University (Prague, Czech Republic), 03-07/07/2023
Periods abroad	Research stay (during PhD) at the "Laboratoire de Robotique" of Université Laval (Québec, Canada) from 30/07/2017 to 22/02/2018, under the supervision of Prof. Clément Gosselin.
Supervisions	PhD student (Deng Lin) from Zhejiang Sci-Tech University (People's Republic of China), from 15/05/2019 to 17/06/2020, at Alma Mater Studiorum – University of Bologna, on cable-driven parallel robots PhD student (Giuseppe Sciarra) at Alma Mater Studiorum – University of Bologna, from 01/11/2022 (ongoing), on innovative gear reducers with low backlash for industrial robots, together with Bonfiglioli SpA

Organization or participation to research groups	▪ Project "Portable measurement and monitoring device for predictive maintenance of hydraulic pumps", in partnership with GB ServiceLab S.r.l. of Reggio Emilia (since 16/03/2020), selected for the "Tech reports" category of the "Technical Novelty Challenge", within the EIMA 2021 trade show (with presentation of selected projects at dedicated area), Europe's leading agriculture/gardening technology show; Bologna, 10/19/2021. ▪ Research in collaboration with MiniMotor S.p.a. and Emmegi S.p.a., for vibration resistance analysis of a motor for an automatic machine according to standards EN 60068 and 61800 (06/2022). ▪ Research in collaboration with Tecomec S.r.l. for analysis and optimization of the design of brush-cutting machine heads to reduce the vibration level, with development of measurement software (in LabVIEW) according to standards EN ISO 20643 and 5349. ▪ Collaboration in drafting FAR 2021 proposal for purchase of "SignalStar Vector" equipment, receiving a grant from the University of Modena and Reggio Emilia for € 18190 (participation in research projects eligible for funding based on University competitive calls). ▪ Designing educational and outreach material for European Researchers' Night 2022, with presentation in front of general public.
Meetings and congresses	▪ Speaker at the "Third International Conference on Cable-Driven Parallel Robots" (CableCon2017), 02-04/08/2017, Québec City (Canada). ▪ Speaker at "XI giornata di studio Ettore Funaioli", Bologna (21 /07/2017; proceedings in book, ISBN 978-88-9385-077-3, SSD ING-IND/13). ▪ Speaker at "XII giornata di studio Ettore Funaioli", Bologna (20 /07/2018; proceedings in book, ISBN 978-88-9385-140-4, SSD ING-IND/13). ▪ Speaker at IEEE-CYBER 2019 congress, Suzhou (People's Republic of China, 07/29/08-02/08/2019). ▪ Speaker at IFIT 2020 conference, Naples (Italy, 09 - 11/09/2020; online conference, sponsored by IFToMM ITALY). ▪ Speaker at Romansy 2020 congress, Sapporo (Japan, 20 - 24 / 09 / 2020; online conference). ▪ Speaker at "XIV giornata di studio Ettore Funaioli", Bologna (15/07/2022, SSD ING-IND/13). ▪ Speaker at ISMA 2022 congress, Leuven (Belgium, 12 - 14 / 09 / 2022, in-person conference). ▪ Speaker at I-RIM 2023 conference, Rome (Italy, 20-22 / 10 / 2023, in-person conference). ▪ Speaker at IFToMM 2023 World Congress, Tokyo (Japan, 5 - 10 / 11 / 2023, in-person conference). ▪ Speaker at I-RIM 2024 conference, Rome (Italy, 25-27 / 10 / 2024, in-person conference). ▪ Speaker at IFToMM I4SDG Congress, Villa San Giovanni (Italy, 9 - 12 / 06 / 2025, in-person conference). ▪ Speaker at I-RIM 2025 conference, Rome (Italy, 17-19 / 10 / 2025, in-person conference).

Awards	▪ Leonardo Prize 2015 for the best national thesis on "Development of mechatronic solutions for power transmission in industrial applications", with award ceremony at Quirinale Palace with the President of the Italian Republic (07/03/2016) and the ownership of the company sponsoring the prize (Bonfiglioli S.r.l.); cash prize of €3000. ▪ "Marco Polo" scholarship (University of Bologna, 2017/2018) for travel and accommodation expenses during research stay in Québec, Canada. ▪ "Best Student Paper Award" at IEEE-CYBER 2019 conference, Suzhou (People's Republic of China, 29/07-02/08/2019). ▪ "Young Delegates Program" grant for participation at Romansy 2020 conference, Sapporo (Japan, 9/20/24/2020; online conference). ▪ Gold best student Paper Award at IFIT 2020 conference, Naples (Italy, 09-11/09/2020; online conference). ▪ Gold best student Paper Award at the IFToMM HMM2021 conference, Jaén (Spain, 28-30/04/2022). ▪ National Scientific Habilitation to become Associate Professor in Italy, for the sector ING-IND/13, 2023. ▪ "Bronze best application paper award" at the IFToMM I4SDG 2025 conference in Villa San Giovanni (Italy, 9 – 12/06/2025).

PUBLICATIONS

1. G. **Mottola**, C. Gosselin and M. Carricato, *"Dynamically-feasible elliptical trajectories for fully constrained 3-DOF cable-suspended parallel robots"*, in Cable-Driven Parallel Robots, Springer, Québec, Canada, 2018, pp. 219-230 (conference paper).
2. G. **Mottola**, C. Gosselin and M. Carricato, *"Dynamically feasible periodic trajectories for generic spatial three-degree-of-freedom cable-suspended parallel robots"*, ASME Journal of Mechanisms and Robotics, 10 (3), 2018 (journal paper).
3. G. **Mottola**, C. Gosselin and M. Carricato, *"Dynamically feasible motions of a spatial purely-translational cable-suspended parallel robot"*, Mech. Mach. Theory, 132, 2019 (journal paper).
4. G. **Mottola**, C. Gosselin and M. Carricato, *"Effect of actuation errors on a purely-translational spatial cable-driven parallel robot"*, IEEE-CYBER 2019 (P.R.C; conference paper).
5. G. **Mottola** (2019). *"Dynamically feasible trajectories of fully-constrained cable-suspended parallel robots"* (PhD thesis defended at Alma Mater Studiorum – University of Bologna).
6. M. Bertelli, G. **Mottola**, M. Carati and M. Carricato, *"Analisi dinamica di un meccanismo a ginocchiera per processo di stampaggio"* ("Dynamic analysis of a toggle mechanism for molding process"), A&C. Analisi e Calcolo, 100, 2020 (journal paper).
7. D. Lin, G. **Mottola**, M. Carricato, X. Jiang and Q. Li, *"Dynamically-feasible trajectories for a cable-suspended robot performing throwing operations"*, ROMANSY 2020 (Japan; conference paper).
8. T. Marchi, G. **Mottola**, J. M. Porta, F. Thomas and M. Carricato, *"Position analysis of a class of n-RRR planar parallel robots"*, IFIT 2020 (Italy; conference paper).
9. D. Lin, G. **Mottola**, M. Carricato and X. Jiang, *"Modeling and control of a cable-suspended sling-like parallel robot for throwing operations"*, Applied Sciences, 2020 (journal paper).
10. T. Marchi, G. **Mottola**, J. M. Porta, F. Thomas and M. Carricato, *"Position and singularity analysis of a class of planar parallel manipulators with a reconfigurable end-effector"*, Machines, 9 (1), 2021 (journal paper).
11. G. **Mottola**, M. Cocconcelli, R. Rubini and M. Carricato, *"Gravity balancing of parallel robots by constant-force generators"*, Gravity Compensation in Robotics (Springer, 2021, ed. V. Arakelian, series "Mechanisms and Machine Science", ISBN 978-3-030-95750-6; book chapter).
12. G. **Mottola** and M. Cocconcelli, *"Nomograms: an old tool with new applications"*, HMM2021 (Spain; conference paper).
13. E. Idà, F. Nanetti and G. **Mottola**, *"An alternative parallel mechanism for horizontal positioning of a nozzle in an FDM 3D Printer"*, Machines, 10 (7), 2022 (journal paper).
14. P. Grosso, G. Massaccesi, J. Cavalaglio Camargo Molano, G. **Mottola** and D. Borghi, *"Signal model of a cycloidal drive for diagnostic purposes"*, ISMA 2022 (Belgium; conference paper).
15. M. Strozzi, P. Grosso, G. **Mottola** and R. Rubini, *"Reliability of a resistance spot welding process based on characteristics parameters"*, ISMA 2022 (Belgium; conference paper).
16. G. **Mottola**, P. Grosso, C. Fonte, M. Strozzi, R. Rubini and M. Cocconcelli, *"Modal analysis and condition monitoring for an electric motor through MEMS accelerometers"*, ISMA 2022 (Belgium; conference paper).
17. G. **Mottola** and M. Cocconcelli, *"Nomograms in the history and education of machine mechanics"*, Foundations of Science, 2023 (journal paper).
18. M. Cocconcelli, C. Fonte, P. Grosso, G. **Mottola**, M. Strozzi and R. Rubini, *"A European Researchers' Night project on mechanical vibrations for high school students"*, ISEMMS 2021 (Spain; conf. paper).
19. D. Lin and G. **Mottola**, *"Dynamic launch trajectory planning of a cable-suspended translational parallel robot using point-to-point motions"*, Machines, 11 (2), 2023 (journal paper).
20. G. **Mottola** and A. Martini, *"A novel spatial 3-DoF constant-force generator for the static balancing of parallel robots"*, IFToMM WC 2023 (Japan; conference paper).
21. F. Conti, G. **Mottola**, C. T. Recchiuto, A. Sgorbissa, *"Inspection of large-scale solar plants by an autonomous drone: planning and control"*, 2023 I-RIM (Italy; conference paper).

22. L. Coltelli and G. **Mottola**, *"Progettazione di un riduttore epicicloidale per veicoli elettrici"* ("Design of a planetary gearbox for electric vehicles"), Organi di Trasmissione, no. 10, 2023.
23. G. Sciarra, G. **Mottola**, G. Casamenti, and M. Carricato, *"An innovative low-backlash Wolfrom gearbox with beveloid gears for robotic applications"*, EUCOMES 2024 (Italy; conference paper).
24. F. Magri, G. Sciarra, G. **Mottola**, G. Lelli and M. Carricato, *"Design and modeling of a dosing unit in a capsule-filling machine"*, IFIT 2024 (Italy; conference paper).
25. G. Sciarra, G. **Mottola**, L. Pezzuolo, G. Casamenti and M. Carricato, *"Pitting resistance determination for beveloid gears"*, MMT Symposium, 2024 (Portugal; conference paper).
26. A. Yousefi, Z. Betta, G. **Mottola**, C. T. Recchiuto and A. Sgorbissa, *"Immersive control of a quadruped robot with Virtual Reality Eye-wear"*, IEEE RO-MAN 2024 (Pasadena, USA; conference paper).
27. A. Yousefi, Z. Betta, G. **Mottola**, C. T. Recchiuto and A. Sgorbissa, *"Teleoperation of Boston Dynamics Spot robot using Meta Quest 2 virtual reality headset"*, 2024 I-RIM (Italy; conference paper).
28. G. **Mottola**, S. Grazzi, M. Malatesta, S. Vallarino, T. Vittorini, C. T. Recchiuto, M. Battaglieri and A. Sgorbissa, *"Drones in docks and port areas to inspect ships and containers for radioactive material"*, 2024 I-RIM (Italy; conference paper).
29. G. Sciarra, G. **Mottola**, G. Casamenti and M. Carricato, *"Omni: A low-backlash planetary Wolfrom gearbox with beveloid gears for robotic applications"*, Mech. Mach. Theory, 214, 2025 (journal paper).
30. G. Sciarra, G. **Mottola**, M. Pleguezuelos, M. B. Sánchez, M. Carricato and J. I. Pedrero, *"Analysis of the contact stress of beveloid gears with straight teeth and parallel axes"*, Mech. Mach. Theory, 214, 2025 (journal paper).
31. G. **Mottola**, P. Maddio, A. Cammarata, R. Sinatra and F. Garescì, *"Applications of Traveling Salesman Problem solvers for path planning of parallel robots"*, I4SDG 2025 (Italy; conference paper).
32. G. **Mottola**, P. Maddio, A. Cammarata, R. Sinatra and F. Garescì, *"The Traveling Salesman Problem in parallel robotics: definitions, optimization and performance"*, I-RIM 2025 (Italy; conference paper).
33. M. Moriconi, G. Rocca, L. Grassi, G. **Mottola**, M. Paolucci, C. T. Recchiuto and A. Sgorbissa, *"What is the optimal path for a drone exploring a PV plant?"*, I-RIM 2025 (Italy; conference paper).

ADDITIONAL INFORMATION

Projects Activities Recognition	▪ Internship (6 months) in IMA Active S.p.A. Collaborations with ILAPAK and HPE-COXA. ▪ Qualified as a professional engineer in Italy (Industrial Sector – section B – Bologna chapter) since 2017, having qualified in 2015, first exam session (grade 225/240). ▪ Board member for the professional engineering exam in Italy (2021, first session). ▪ Co-advisor of 29 bachelor's and master's theses. ▪ Reviewer for international journals (J. of Mechanisms and Robotics, J. of Mechanical Design, Robotica, IEEE Robotics and Automation Letters, Mechanism and Machine Theory, Advances in Mechanical Engineering, Measurement, J. of Mechanical Engineering Science, IEEE Transactions on Robotics, IEEE Transactions on Mechatronics, J. of Sound and Vibration, Shock and Vibration, J. of Intelligent Service Robotics, Robotics and Autonomous Systems, Meccanica, J. of Robotics, Applied Sciences, Sensors, Robotics, Machines, Discover Sciences) and conferences (CableCon, IFToMM IFIT, IFToMM World Congress, IFToMM I4SDG, Eucomes, ICRA, IROS, ISpaRo, RoMAN). ▪ Member of the reviewer board for the journal Machines (since 07/01/2021). ▪ Co-founder of the PhD Students' Association of Bologna and PhD students' representative. ▪ Strong experience on intellectual property; certified training in forensic engineering. ▪ Doctoral dissertation selected for publication by "Bononia University Press". ▪ Teacher for a course within the PhD program in Bioengineering and Robotics at DIBRIS (University of Genoa), on "Vibration analysis and predictive maintenance", 28-29-30 May and 3-5-6 June 2024 (12 hours). ▪ Teacher for a course within the PhD program in Bioengineering and Robotics at DIBRIS (University of Genoa), on "Parallel robotics: modeling and analysis", 30 September and 1-3-4-7-11 October 2024 (12 hours). ▪ Teacher for an online course for the program on "Drones and autonomous driving: models, properties, applications" at the University of Genoa (2024; 8 hours, 1 credit).

Place: Messina

Date: 30/01/2026

Signature: