Curriculum Vitae
Dario Corona

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ADDRESS

School of Science and Technology
University of Camerino
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ACTUAL POSITION

from February 2022	**Research Assistant Professor - RTDa**, University of Camerino (UNICAM) Field of Research: Mathematical Analysis Project Title: "Mathematical Models for Optimal Controllers in Wind Farms" Advisor: prof. Fabio Giannoni

EDUCATION AND TRAINING

Feb/Jul 2023	**Vising Researcher**, Universidade de São Paulo, Brazil (6 months) Advisor: prof. Paolo Piccione
2020/2021	**Post-Doc Researcher**, University of Camerino (2 years) Field of Research: Mathematical Analysis Project Title: "Sistemi dinamici e applicazioni in ambito energetico" Advisor: prof. Maria Letizia Corradini
2019	**Research scholarship**, University of Camerino (6 months) Project: "Advanced control design for fatigue alleviation for wind turbine" Advisor: prof. Maria Letizia Corradini
06/05/2019	**PhD in Mathematics and Applications**, University of Camerino Field of Research: Control Systems Thesis: "Decomposition of Optimal Tracking Controllers for Weakly Dual Redundant Systems" Advisors: prof. Maria Letizia Corradini and prof. Roberto Giambò
15/04/2015	**Master Degree in Mathematics and Applications**, University of Camerino Final Grade: full marks (110/110) and *summa cum laude* Thesis: "A Mathematical Model for the Development of a Lower Extremity Exoskeleton" Advisors: prof. Fabio Giannoni and prof. Maria Letizia Corradini
2014	**Research scholarship** (6 months) Project: "Development of a lower limb exoskeleton for disabled people" founded by *MES S.p.a.* and the University of Camerino
03/10/2012	**Bachelor Degree in Mathematics and Applications**, University of Camerino Final Grade: full marks (110/110) and *summa cum laude* Thesis: "GARCH Model and Volatility Analysis in Finance" Advisor: prof. Carlo Lucheroni
2009	**Indam** (Istituto Nazionale di Alta Matematica) **scholarship** National scholarship of 3 years for bachelor students in Mathematics

from 2015 until 2022	**Founding Partner** and **CEO** of **LiMiX Srl**, Spin-off of University of Camerino (Italy), website: www.limix.it Limix realized Talking Hands, a wearable device for gesture recognition.
from Sept 2021	**Teacher of Mathematics** at public secondary school "IPSIA Don Pocognoni", Matelica, Italy, Temporary replacement as Research Assistant Professor (Italian Law 240/2010)
Aug 2021	**Teacher Qualification at secondary level (A026 - Mathematics)** First place in the open examination for Marche region.
Feb-June 2019	**External Expert and Tutor** For the PON/FSE project "10.6.6 A-FSEPON-LA-2017-27", I.S.I.S.S. Magarotto, Rome Title "IPSIA: Immaginare per creare" - Module "Talking Hands: i segni prendono voce" - 108h
Feb-Aug 2015	**Project Leader** Creation and implementation of a 3D mounting and maintenance manual for electric cars University of Camerino and Belumbury Spa.

RESEARCH EXPERIENCE

	Documents	Citations	H-index
Scopus	23	88	5
Google Scholar	28	122	7

In the first years of my research career, I have worked on both **Optimal Control Theory** and **Gesture Recognition**. Nowadays, my research is focused on **Mathematical Analysis**, with a special regard to the study of Hamiltonian systems and Differential Geometry.

Preprints

26	D. Corona, R. Giambó, O. Luongo, "Motion of test particles in quasi anti-de Sitter regular black holes", **2024** arXiv:2402.18997
25	D. Corona, S. Nardulli, R. Oliver-Bonafoux, G. Orlandi, P. Piccione, "Multiplicity results for mass constrained Allen-Cahn equations on Riemannian manifolds with boundary", **2024** arXiv:2401.17847
24	E. Caponio, D. Corona, R. Giambò, P. Piccione, "Fixed energy solutions to the Euler-Lagrange equations of an indefinite Lagrangian with affine Noether charge", **2023** arXiv:2307.07883

Journal papers

23	V. Benci, D. Corona, S. Nardulli, L. E. Osorio Acevedo, P. Piccione, "Corrigendum to: Lusternik-Schnirelman and Morse Theory for the Van der Waals-Cahn-Hilliard equation with volume constraint", Nonlinear Analysis, vol. 238, **2024** doi: 10.1016/j.na.2023.113389
22	D. Corona, A. Della Corte, "Mixing properties of erasing interval maps", Ergodic Theory and Dynamical Systems, vol. 44(2), **2024** doi: 10.1017/etds.2023.16
21	D. Corona, A. Della Corte, F. Giannoni, "A non-autonomous variational problem describing a nonlinear Timoshenko beam", SIAM Journal of Mathematical Analysis, vol. 55(5), **2023** doi: 10.1137/22M1493653

20   D. Corona, R. Giambò, F. Giannoni, P. Piccione, "On the relative category in the brake orbits problem", Topological Methods in Nonlinear Analysis, vol. 61, no. 1, pp. 199-215, **2023**
doi: 10.12775/TMNA.2022.057

19   E. Caponio, D. Corona, "A variational setting for an indefinite Lagrangian with an affine Noether charge", Calculus of Variations and Partial Differential Equations, 62:39, **2023**
doi: 10.1007/s00526-022-02379-1

18   M. L. Corradini, G. Ippoliti, G. Orlando, D. Corona "A data-driven model-free adaptive controller with application to wind turbines", ISA Transactions, vol. 136, pp. 267–274, **2023**
doi: 10.1016/j.isatra.2022.11.002

17   D. Corona, F. Giannoni, "Brake orbits for Hamiltonian systems of classical type via Finsler geodesics", Advances in Nonlinear Analysis, vol. 11, no. 1, 2022, pp. 1223-1248, **2022**
doi: 10.1515/anona-2022-0222

16   D. Corona, A. Della Corte, "The critical exponent functions",
Comptes Rendus Mathématique, vol. 360, pp. 315-332, **2022**
doi: 10.5802/crmath.286

15   D. Corona, "A multiplicity result for orthogonal geodesic chords in Finsler disks",
Discrete and Continuous Dynamical Systems, vol. 41(11), **2021**
doi: 10.3934/dcds.2021079

14   F. Pezzuoli, D. Corona, and M. L. Corradini, "Recognition and classification of dynamic hand gestures by a wearable data-glove", SN Computer Science, vol. 2, **2021**
doi: 10.1007/s42979-020-00396-5

13   D. Corona, "A multiplicity result for Euler–Lagrange orbits satisfying the conormal boundary conditions", Journal of Fixed Point Theory and Applications, vol. 22, pag. 60, **2020**
doi: 10.1007/s11784-020-00795-4

12   D. Corona and F. Giannoni, "A New Approach for Euler-Lagrange Orbits on Compact Manifolds with Boundary", Symmetry, vol. 12, n. 11, pag. 1917, **2020**
doi: 10.3390/sym12111917

11   F. Pezzuoli, D. Tafaro, M. Pane, D. Corona, and M. L. Corradini, "Development of a new sign language translation system for people with autism spectrum disorder", Advances in Neurodevelopmental Disorders, **2020**
doi: 10.1007/s41252-020-00175-6

10   D. Corona, A. Cristofaro, and D. Rotondo, "Reachability and stabilization of scheduled steady-states for LPV single-input systems", Journal of the Franklin Institute, vol. 356, n. 8, pagg. 4478–4495, **2019**
doi: 10.1016/j.jfranklin.2019.04.007

9   D. Corona and A. Cristofaro, "Optimality principles and decomposition of tracking controllers for weakly dual redundant systems", Optimal Control Applications and Methods,16, **2018**
doi: 10.1002/oca.2420

Conference papers

8   F. Pezzuoli, D. Corona, and M. L. Corradini, "Dynamic gestures recognition through a low-cost data glove", in 2020 IEEE international conference on human-machine systems (ICHMS), pagg. 1–3, **2020**
doi: 10.1109/ICHMS49158.2020.9209424

7   D. Corona and A. Cristofaro, "Optimal controlled steady-states for multi-input underactuated systems", 18th European Control Conference (ECC), 3734-3739, **2019**
doi: 10.23919/ECC.2019.8795796

6   F. Pezzuoli, D. Corona, and M. L. Corradini, "Improvements in a Wearable Device for Sign Language Translation", in Advances in Human Factors in Wearable Technologies and Game Design, AHFE, pagg. 70–81, **2019** doi: 10.1007/978-3-030-20476-1_9

5   D. Corona and A. Cristofaro, "Optimal closed-loop tracking controllers for weakly dual redundant systems with periodic references", IEEE CDC, **2018** doi: 10.1109/CDC.2018.8619169

4   D. Corona and A. Cristofaro, and D. Rotondo, "Optimizing output regulation for a class of underactuated LPV systems", in Mediterranean control conference, pagg. 135–140, **2017**

doi: [10.1109/MED.2017.7984107](10.1109/MED.2017.7984107)

3   D. Corona and A. Cristofaro, and M. L. Corradini, "Optimal output regulation for underactuated systems with quasiperiodic references", IFAC World Congress 2017, pagg. 3717–3722, **2017** doi: 10.1016/j.ifacol.2017.08.712

2   F. Pezzuoli, D. Corona, M. L. Corradini, and A. Cristofaro, "Development of a wearable device for sign language translation", in Int. Workshop on human-friendly robotics (HFR2017), Cham, pagg. 115–126, **2017** doi: [10.1007/978-3-319-89327-3_9](10.1007/978-3-319-89327-3_9)

1   D. Corona and A. Cristofaro, "Some remarks on optimal output regulation for weakly dual redundant plants", in Mediterranean control conference, pagg. 1205–1211, **2016** doi: [10.1109/MED.2016.7536028](10.1109/MED.2016.7536028)

Seminars and communications at conferences

19/07/23	"On the multiplicity of the brake orbits", (invited speaker) Universidade Federal do ABC, São Paulo, Brazil
02/06/23	"On the multiplicity of the brake orbits", (invited speaker) Universidade de São Paulo, São Paulo, Brazil
26/05/23	"On the multiplicity of the brake orbits", (invited speaker) Universidade de Federal São Carlos, São Carlos, Brazil
19/04/23	"On the multiplicity of the brake orbits", (invited speaker) La ricerca italo-brasiliana di fronte alle sfide della matematica contemporanea, Brasilia, Brazil
16/03/23	"The Critical Exponent Functions", (invited speaker) Universidade Federal do ABC, São Paulo, Brazil
11/11/22	"On the multiplicity of the brake orbits", (invited speaker) 1–st QFNU-UNICAM Conference on Pure and Applied Mathematics, Camerino, Italy
10/11/22	"A variational setting for indefinite Lagrangians with an affine Noether charge", (invited speaker) 1–st QFNU-UNICAM Conference on Pure and Applied Mathematics, Camerino, Italy
12/05/22	"On the existence and multiplicity of the brake orbits", (invited speaker) First Adriatic Meeting on Nonlinear Differential Equations, Ancona, Italy
14/02/22	"The Critical Exponent Functions", (invited speaker) University of Bologna, Bologna, Italy
21/01/20	"Orthogonal Geodesics Trajectories in Manifolds with Boundary", (invited speaker) Ruhr-Universität Bochum, Bochum, Germany

Grants

February 2024	Hosting professor as a part of the **GNAMPA 2024** "Professori Visitatori" program Visiting professor: Stefano Nardulli, Universidade Federal do ABC, Brazil
2022/2023	Coordinator of the following **GNAMPA 2022** project: "Metodi variazionali per Lagrangiane con bassa regolarità e Lagrangiane indefinite" Participants: D. Corona, E. Caponio, F. Giannoni, R. Giambò, A. Masiello
2022	**Kovalevskaya grant** for the participation at the ICM 2022 (Not attended because of the cancelation of the event due to the war in Ukraine)

TEACHING EXPERIENCE

PhD courses & Abroad

2021/22	Professor of "An Introduction to KAM Theory", UNICAM, School of Advanced Studies, 21h
2021	External Lecturer of the PhD course "Critical Point Theory", Universidade de São Paulo, Brazil, 30h

Courses in Italian universities

2023/24 Prof. of Calculus of Variations, UNICAM, Master Course in Mathematics and Applications, 42h
      Prof. of Analysis 3, UNICAM, Bachelor course in Mathematics and Applications, 42h

2022/23 Prof. of Calculus of Variations, UNICAM, Master Course in Mathematics and Applications, 42h
      Prof. of Analysis 3, UNICAM, Bachelor course in Mathematics and Applications, 42h

2021/22 Adjunct Prof. of Analysis 3, UNICAM, Bachelor course in Mathematics and Applications, 42h
      Adjunct Prof. of Analysis 2, UNICAM, Bachelor Course in Physics, 17h

2020/21 Adjunct Prof. of Analysis 3, UNICAM, Bachelor course in Mathematics and Applications, 42h
      Adjunct Prof. of Analysis 2, UNICAM, Bachelor Course in Physics, 17h

2019/20 Adjunct Prof. of Analysis 3, UNICAM, Bachelor course in Mathematics and Applications, 42h
      Exercise Lectures of Analysis 1, UNICAM, Bachelor course in Mathematics and Applications, 25h
      Exercise Lectures of Analysis 2, UNICAM, Bachelor course in Mathematics and Applications, 14h
      Exercise Lectures of Mathematical Methods for Physics, UNICAM, Bachelor Course in Physics,25h

2018/19 Adjunct Prof. of System Analysis, UNICAM, Mathematics and Applications, 42h
      Exercise Lectures of Mathematical Methods for Physics, UNICAM, Bachelor Course in Physics,25h
      Exercise Lectures of Analysis 2, UNICAM, Bachelor Course in Physics, 25h

2017/18 Exercise Lectures of Analysis 2, UNICAM, Bachelor Course in Physics, 25h

2016/17 Programming Class, UNICAM, Bachelor Course in Mathematics and Applications, 30h
      Exercise Lectures of Analysis 2, UNICAM, Bachelor course in Mathematics and Applications, 25h
      Exercise Lectures of Analysis 1, UNICAM, Bachelor course in Mathematics and Applications, 25h

Theses

I supervised the following theses for the Master and Bachelor degrees of Mathematics and Applications in UNICAM.

Master Theses

2022 Filippo Polidori, "Critical Point Theory and Geodesical Connectedness in Lorentzian Manifolds";
Rodolfo Rapini, "Diffeomorphisms of the Circle and KAM Theory";

Bachelor Theses

2023 Alice Arena, "Teorema della Funzione Implicita e Teoria della Biforcazione";
Simona Bertè, "Teoria del Caos e Applicazioni alla Crittografia";

2022 Francesco Allegrezza, "La trasformata di Fourier e le sue applicazioni nel controllo qualità";
Alessandro Rossi, "Introduzione all'Analisi p–adica";
Francesco Finucci, "Teoria del caos e generazione di numeri pseudocasuali";
Lorenzo Ubaldo Massetti, "Soluzione numerica di equazioni differenziali ordinarie";

2021 Gianluca Pacini, "Risoluzione di Equazioni Differenziali con il Metodo di Galerkin";
Michelangelo Faleschini, "Serie di Fourier: dall'equazione del calore alle applicazioni informatiche";
Matteo Carletti, "Introduzione all'Analisi non Standard";

2020 Davide Fioriti, "Reti Neurali e Teorema di Approssimazione Universale";
Letizia Falzetti, "Fast Fourier Transform e Applicazioni";
Gulsin Celik, "Introduzione al Calcolo delle Variazioni";
Laura Carini, "Machine Learning e riconoscimento di sequenze introniche nel genoma di protozoi ciliati";
Edoardo Langella, "Mountain Pass Theorem e risoluzione del problema di Dirichlet per equazioni ellittiche";

2019 Federica Volpi, "Teoria dei Punti Critici";
Rudy Milani, "Studio Preliminare per il Riconoscimento di Gesti Dinamici basato su Guanti Sensorizzati";

2018 Giulia Sbrega, "Realizzazione di un sistema di Predictive Text".

THIRD MISSION

Through the spin-off Limix, of which I was founding partner and CEO from 2015 until 2022, I translated the academic research into products with high social impact. The main project was Talking Hands, a wearable device for gesture recognition which aims to help people with severe speech or language problems. After the start-up period, Limix has been successfully sold.

Patents:

- Talking Hands: N. 102016000038807 granted by MISE (Ministero dello Sviluppo Economico);

- "Apparato di acquisizione di immagini di documentazione cartacea": N. 102020000006358 granted by MISE.

Awards:

2020	**POR MARCHE FESR 2014/2020** "Promozione della ricerca e dello sviluppo negli ambiti della specializzazione intelligente"
2019	**Seal of Excellence** (SME Instrument Phase 2): Certificate delivered by the European Commission which states that Talking Hands was scored as a high-quality project proposal in a highly competitive evaluation process
2018	**SME Instrument Phase 1**: EU Commision funds for feasibility study (project manager)
2018	**finalist of Chivas Venture**, international competiotion for start-up with high social impact
2017	**POR MARCHE FESR 2014/2020** "Sostegno allo Sviluppo ed al Consolidamento di Start-Up ad alta Intensità di Applicazione di Conoscenza"
2016	**R.O.M.E. Prize**, 100.000$ for the European maker project with highest social impact
2016	**E-Capital**, regional Business plan competition
2015	**StartCup Marche**, regional Business plan competition

Public Speeches:

During my work and academic careers, I had different public speeches. The main ones are listed below.

2019	**TEDxAscoliPiceno** with the speech "Il primo obiettivo della tecnologia"
	https://www.youtube.com/watch?v=kZKQHc-4EFA&t=1s
2021	**Sharper Night - La notte dei ricercatori** with the speech "Ricerca e Disabilità"
	Famelab - Talking Science
	https://www.youtube.com/watch?v=r0M9y_rpqYc and https://www.youtube.com/watch?v=pfoKYrhNK1U
2019	**Forum PA** (Italian National Forum of Public Administration)
	invited by Undersecretary for Family and Disability Vincenzo Zoccano, Rome
2018	**Makers Town**, showcasing the Town of the Future and what needs to be done in terms of policy, private investment and education, Bruxelles
	SUCCEED, Stimulate financial education to foster entrepreneurship and Development, Bruxelles

LANGUAGES

Italian	Mother language
English	Cambridge First Certification (B2)
Portuguese	Celpe-Bras certification (B1)