

# Curriculum Vitae

## Dario Corona

Updated in February 2025

### ACTUAL POSITION

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from Feb 2025 **Postdoctoral Researcher**, University of Camerino (UNICAM)  
Field of Research: Mathematical Analysis  
Project Title: “Topological and Variational Methods in PDE and Dynamical Systems”  
Advisor: Prof. Roberto Giambò

### EDUCATION AND TRAINING

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from Feb 2022 **Research Assistant Professor - RTDa**, University of Camerino (UNICAM)  
until Jan 2025 Field of Research: Mathematical Analysis  
Project Title: “Mathematical Models for Optimal Controllers in Wind Farms”  
Advisor: Prof. Fabio Giannoni

June-July **Vising Researcher**, Universidade de São Paulo, Brazil (2 months)  
2024 Collabolators: Prof. Paolo Piccione, prof. Stefano Nardulli, PhD. João Henrique Andrade

Feb/Jul **Vising Researcher**, Universidade de São Paulo, Brazil (6 months)  
2023 Advisor: Prof. Paolo Piccione

2020/2021 **Post-Doc Researcher**, University of Camerino (2 years)  
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  
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

## WORK EXPERIENCE

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- Oct-Nov 2024 **External Expert**  
For the Next Generation EU project, I.S.S. Volterra-Elia, Ancona  
Title “Think Stem: Potenziamo Insieme” - Module “Olimpiadi della Matematica” - 20h
- from 2015 until 2022 **Founding Partner and CEO of LiMiX Srl**,  
Spin-off of University of Camerino (Italy), website: [www.limix.it](http://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 the 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

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	Documents	Citations	H-index
<a href="#">Scopus</a>	26	109	6
<a href="#">Google Scholar</a>	34	152	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

- 30 J.H. Andrade, D. Corona, S. Nardulli, P. Piccione, R. Ponciano, “From bubbles to clusters: Multiple solutions to the Allen–Cahn system”, **2024**  
[arXiv:2410.17026](#)
- 29 D. Corona, R. Giambò, P. Piccione, “A note on the regularity and the existence of Riemannian splines”, **2024**  
[arXiv:2407.18408](#)
- 28 D. Corona, A. Della Corte, M. Farotti, “Dynamical properties of critical exponent functions”, **2024**  
[arXiv:2406.14487](#)
- 27 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](#)

### Journal papers

- 26 D. Corona, R. Giambò, “Global Models of Collapsing Scalar Field: Endstate”,  
Symmetry, 16(5), 583, **2024**  
doi: [10.3390/sym16050583](https://doi.org/10.3390/sym16050583)
- 25 D. Corona, R. Giambò, O. Luongo, “Motion of test particles in quasi anti-de Sitter regular black holes”, International Journal of Geometric Methods in Modern Physics, **2024**  
doi: [10.1142/S021988782440019X](https://doi.org/10.1142/S021988782440019X)
- 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”,  
Annali di Matematica Pura e Applicata, **2024**  
doi: [10.1007/s10231-024-01424-4](https://doi.org/10.1007/s10231-024-01424-4)
- 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](https://doi.org/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](https://doi.org/10.1017/etds.2023.16)
- 21 D. Corona, A. Della Corte, F. Giannoni, “A non-autonomous variational problem describing a non-linear Timoshenko beam”, *SIAM Journal of Mathematical Analysis*, vol. 55(5), **2023**  
doi: [10.1137/22M1493653](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/10.1109/MED.2016.7536028)

### Seminars and communications at conferences

- 09/10/24 “On the multiplicity of the brake orbits”, (invited speaker)  
Università degli Studi dell’Aquila, L’Aquila, Italy
- 25/09/24 “The Critical Exponent Functions”, (invited speaker)  
University of Cape Town, Cape Town , South Africa
- 27/07/24 “Multiplicity results for the Allen-Cahn equation”, (invited speaker)  
CLAM (Congresso Latino-Americano e do Caribe de Matemática), João Pessoa, Brazil
- 30/04/24 “A multiplicity result for the Allen-Cahn equation”, (invited speaker)  
University of Cape Town, South Africa (online)
- 11/04/24 “Multiplicity results for the Allen-Cahn equation”, (invited speaker)  
Università degli Studi di Verona, Verona, Italy
- 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

## Conference Organization

- 2024 Member of the organizing committee of the conference “Bridging Borders: International Geometric Analysis in São Paulo”, 19th–23rd August, Instituto de Matemática e Estatística, Universidade de São Paulo, São Paulo, Brazil

## Grants

- 2024 Recipient of a foreign scholarship from **INDAM**  
spent one month at Instituto de Matemática e Estatística, Universidade de São Paulo, Brazil
- 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

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### Advising

- Ongoing Co-advisor of the PhD student Bruno Almeida at the Federal University of ABC, Brazil.

### PhD courses & Abroad

- 2024 External Lecture of the PhD course “Critical point theory in Geometrical Analysis”,  
Universidade de São Paulo, Brazil, 16h
- 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

- 2024/25 Prof. of Analysis 3, UNICAM, Bachelor course in Mathematics and Applications, 42h
- 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

- 2024 F. Scarabotti, “A multiplicity result for the Allen-Cahn equation”;
- 2022 F. Polidori, “Critical Point Theory and Geodesical Connectedness in Lorentzian Manifolds”;
- R. Rapini, “Diffeomorphisms of the Circle and KAM Theory”;

### Bachelor Theses (the following theses were written in Italian)

- 2024 E. Boeri, “Trasformata di Fourier: Teoria e Applicazioni nell’Analisi dell’Audio”;
- 2023 A. Arena, “Teorema della Funzione Implicita e Teoria della Biforcazione”;
- S. Bertè, “Teoria del Caos e Applicazioni alla Crittografia”;
- 2022 F. Allegrezza, “La trasformata di Fourier e le sue applicazioni nel controllo qualità”;
- A. Rossi, “Introduzione all’Analisi  $p$ -adica”;
- F. Finucci, “Teoria del caos e generazione di numeri pseudocasuali”;
- L. U. Massetti, “Soluzione numerica di equazioni differenziali ordinarie”;
- 2021 G. Pacini, “Risoluzione di Equazioni Differenziali con il Metodo di Galerkin”;
- M. Farina, “Teorema della funzione implicita e sue applicazioni”;
- M. Faleschini, “Serie di Fourier: dall’equazione del calore alle applicazioni informatiche”;
- M. Carletti, “Introduzione all’Analisi non Standard”;
- 2020 D. Fioriti, “Reti Neurali e Teorema di Approssimazione Universale”;
- L. Falzetti, “Fast Fourier Transform e Applicazioni”;
- G. Celik, “Introduzione al Calcolo delle Variazioni”;
- L. Carini, “Machine Learning e riconoscimento di sequenze introniche nel genoma di protozoi ciliati”;
- E. Langella, “Mountain Pass Theorem e risoluzione del problema di Dirichlet per equazioni ellittiche”;
- 2019 F. Volpi, “Teoria dei Punti Critici”;
- R. Milani, “Studio Preliminare per il Riconoscimento di Gestii Dinamici basato su Guanti Sensorizzati”;
- 2018 G. Sbrega, “Realizzazione di un sistema di Predictive Text”.

## THIRD MISSION

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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 Commission funds for feasibility study (project manager)
- 2018 **finalist of Chivas Venture**, international competition 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](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

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<b>Italian</b>	Mother tongue
<b>English</b>	Cambridge First Certificate (B2)
<b>Portuguese</b>	Celpe-Bras certificate (B1)

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In riferimento al D.lgs 196/03 “Codice in materia di protezione dei dati personali”, autorizzo l’utilizzo dei miei dati personali e professionali per esigenze di selezione e comunicazione.

Il sottoscritto Corona Dario, consapevole che le dichiarazioni false comportano l’applicazione delle sanzioni penali previste dall’art. 76 del D.P.R. 445/2000, dichiara che le informazioni riportate nel presente curriculum vitae corrispondono a verità.