



Igor Nelson Garrido da Cruz

Date of birth: 14/02/1991

Place of birth: Coimbra

Nationality: Portuguese

Gender: Male

CONTACT

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(Home)

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europass

ABOUT ME

Interdisciplinary researcher and alternative thinker working at the intersection of computational biology, bioinformatics, and therapeutics. Experienced in cell culture models, plant-based medicine, and bioelectronic medicine. Passionate about bridging rigorous scientific research with practical applications.

WORK EXPERIENCE

VortexLab Pampilhosa, Portugal

Interdisciplinary researcher

01/09/2025 – Current

- Directed independent interdisciplinary research on living systems, energy storage, and bioelectronic medicine.
- Designing and conducting experiments with microbes and plants;
- Essential oils extraction and plant extract destillation;
- Managing lab operations, data collection, and analysis;
- Writing papers, presentations and science communication.

Living Place Pampilhosa, Portugal

Event Assistant

2023 – Current

- Support in team building activities and logistics;
- Support in EcoAventura projects - Environmental education activities for children.

Coimbra University Pampilhosa, Portugal

Private Tutor (Self-employed)

2022 – Current

Supported dozens of students.

Tutoring and support in the development of projects in programming languages. Java, C, C#, R, Python, PHP, MySQL, etc.

NaturaCura Coimbra

Business owner and Therapist

03/2019 – 03/2021

Owner and CEO activities.

Management and marketing.

Therapeutic activities: health counseling, herbalism, medicinal plants, weight loss.

Universidade Católica Portuguesa Viseu, Portugal

Bioinformatics Teacher

15/04/2018 – 15/08/2018

Lecturing the practical part of the bioinformatics course for Biomedical Sciences.

Omibee, Poetic systems, Texas (United States) Porto, Portugal

Freelance Web Developer

09/2018 – 03/2019

Maintenance, development and tech support of multiple websites.

Tools: PHP, MySQL, Drupal, Javascript, JQuery.

Universidade Católica Portuguesa Viseu, Portugal

Fellowship Researcher

2017 – 2018

Bioinformatics and data-analysis. Usage of saliva as a novel diagnosis media.

Main Tools: Python, Orange, Excel.

Responsibilities: Research, Scientific Writing.

Omibee Porto, Portugal

Web Developer

2015 – 2016

Websites development and tech support

Main tools: Podio, PHP, MySQL, Drupal, PHPStorm, Javascript, CSS, Codeship, GitHub, Vagrant. Main responsibilities: DevOps, Development, Deployment, Group Work.

Faculdade de Ciencias e Tecnologias da Universidade de Coimbra Coimbra

Fellowship Researcher

2014 – 2015

Recognition of food from photos. Main Tools: Python, Matlab, Computer Vision Algorithms Responsibilities: Implementation and optimization of algorithms, Managing introductory BSc. researchers

EDUCATION AND TRAINING

2023 – 2024 Coimbra

MSc in Celular and Molecular Biology (In Progress) Faculdade de Ciências e Tecnologia da Universidade de Coimbra

Cell Regulation, Neuroimmunology, Lab Rotations, Research Planning, Computational Biology

Website <https://www.uc.pt/fctuc/> | Level in EQF EQF level 7

2022 – 2023 Coimbra

Postgraduate Diploma in Computational Biology Faculdade de Ciências e Tecnologia da Universidade de Coimbra

Bioinformatics, Omics, Data Analysis, Computational Drug Discovery, Cellular and Molecular Biology, Molecular Systems Modeling, Quantitative Biology, Scientific Writing

Website <https://www.uc.pt/fctuc/> | Level in EQF EQF level 7

2016 – 2017 Coimbra, Portugal

Biology Studies (toward B.Sc.) Faculdade de Ciências e Tecnologia da Universidade de Coimbra

- Subjects Completed: Biochemistry, Celular Biology, Methods and Techniques on Cytology and Fisiology, Biostatistics, Physics, Mathematics, Programming.

Website <https://www.uc.pt/fctuc/> | Level in EQF EQF level 6

2012 – 2014 Coimbra, Portugal

MSc in Systems and Computation Faculdade de Ciências e Tecnologia da Universidade de Coimbra

Medical Informatics, Machine learning, Evolutionary Computing, Artificial Intelligence

Python, Java, Matlab

Website <https://www.uc.pt/fctuc/> | Level in EQF EQF level 7 | Thesis PPRINT: Prediction of Protein-Protein Interactions

2009 – 2012 Coimbra, Portugal

BSc in Informatics Engineering Faculdade de Ciências e Tecnologia da Universidade de Coimbra

- Algebraic Geometry and Analytic Geometry, Mathematics, Programming, Computer Architecture, Statistics, Physics, Information Theory, Data Structures, Algorithms, Multimedia, Simulations, Scientific Computing, Databases, Software Engineering, Management, Compilers, Graphic Computing, Artificial Intelligence.
- Tools and Programming Languages: Java, Matlab, C, SQL, Tomcat, Servlets, JSP, Adobe Flash, ActionScript 3.0, OpenGL, Python, Data Structures, Linux

Website <https://www.uc.pt/fctuc/> | Level in EQF EQF level 6

TRAINING / ADDITIONAL EXPERIENCE SECTION

2023

Laboratory Rotation – Electrophysiology (Patch Clamp Technique)

Center for Neuroscience and Cell Biology, Coimbra, Portugal

- Trained in whole-cell patch clamp technique on rat hippocampal pyramidal neurons.
- Prepared intracellular and extracellular solutions, operated patch-clamp rigs, and handled micropipettes with precision for giga-seal and whole-cell configuration.
- Acquired and analyzed electrophysiological data under voltage-clamp and current-clamp protocols, identifying action potentials, synaptic firing, and neuronal excitability.
- Developed technical skills in rig setup, noise reduction, and data quality control.

2024 – 2024

Laboratory Rotation – Cell Culture & Bioassays

Plants4Health Group, iCBR, Faculty of Medicine, University of Coimbra

- Gained hands-on experience with mammalian cell culture (RAW 264.7, HaCat, NHDF), including medium preparation, cell counting, subculturing, and cryopreservation.
- Learned cell plating and treatment with plant extracts to assess bioactivity.
- Learned application of functional assays: Griess assay (inflammation marker), Resazurin assay (cellular metabolic activity), and Sulforhodamine B assay (cell mass and viability).
- Developed skills in sterile technique, cell handling, and quantitative data analysis using microplate readers.

ADDITIONAL EDUCATION

2019 – 2021

Over 2000 hours of courses in Naturopathy and Herbal medicine

- Centre of Excellence: Master Herbalist Diploma, Advanced Master Herbalist Diploma, Psychotropic Plants Diploma, Astrology, Introduction to Acupuncture
- Extensive QiGong movement, breathing and meditation, Michaël Bijker
- Acupressure Masterclass, Annette Reilly
- Curso de Plantas e Cogumelos Imunodepressores por Internet, Prof. Doutor A. Proença da Cunha
- Curso de Fitoterapia por Internet, Prof. Doutor A. Proença da Cunha
- Terapeuta em Fitoterapia, Marcelo Rigoti
- Terapeuta Naturopata, Rafael Nunes
- Moxaterapia e Ventosaterapia, Luciana Domingos

Additional Education on Informatics

- Basic Skills on Information and Technology, Information Tecnology Disclosure Foundation, Coimbra, Portugal, 2001
- Millennium Generation 3.0, Instituto Português da Juventude, 2006
- The Complete Web Developer Course, Rob Percival, Udemy
- NanoDrop, Workshop
- Kaggle courses: Intro to Machine Learning, Python, Pandas, Intermediate Machine Learning, Data Visualization, Data Cleaning
- R Programming, Coursera, Johns Hopkins University
- Whole genome sequencing of bacterial genomes - tools and applications, Technical University of Denmark (DTU), Coursera

LANGUAGE SKILLS

MOTHER TONGUE(S): Portuguese

Other language(s):

English

Listening C2

Spoken production C1

Reading C2

Spoken interaction C1

Writing C2

Spanish

Listening B1

Spoken production B1

Reading B1

Spoken interaction B1

Writing A1

Russian

Listening A1

Spoken production A1

Reading A2

Spoken interaction A1

Writing A1

French

Listening A1

Spoken production A1

Reading A1

Spoken interaction A1

Writing A1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

SKILLS

Microsoft Office | Data Science | Data Collection, Data Processing, Data Analysis, Data Visualisation | problem-solving with digital tools | multidisciplinary research

PUBLICATIONS

[Peer reviewed Article] Exploring the influence of Schumann resonance and electromagnetic fields on bioelectricity and human health

Nelson, I. (2025). Exploring the influence of Schumann resonance and electromagnetic fields on bioelectricity and human health. *Electromagnetic Biology and Medicine*, 44(3), 348–358. doi: <https://doi.org/10.1080/15368378.2025.2508466>

[Peer reviewed Article] SalivaPRINT Toolkit - Protein profile evaluation and phenotype stratification. Journal of proteomics

Cruz, I., Esteves, E., Fernandes, M., Rosa, N., Correia, M. J., Arrais, J. P., & Barros, M. (2018). SalivaPRINT Toolkit - Protein profile evaluation and phenotype stratification. *Journal of proteomics*, 171, 81–86. doi: <https://doi.org/10.1016/j.jprot.2017.08.011>

[Peer reviewed Article] Approaches for image segmentation applied to food

Martins, P., Cruz, I., Cecílio, J., Abbasi, M., & Furtado, P. (2017). Approaches for image segmentation applied to food. *International Journal of Applied Pattern Recognition*, 4(2), 161. doi: <https://doi.org/10.1504/IJAPR.2017.085330>

[Conference Paper] SalivaPrint as a non-invasive diagnostic tool

Esteves, E., Cruz, I., Esteves, A. C., Barros, M., & Rosa, N. (2020). SalivaPrint as a non-invasive diagnostic tool. In *Proceedings of the 13th International Joint Conference on Biomedical Engineering Systems and Technologies (BIOSTEC 2020) – HEALTHINF* (pp. 677–682). SciTePress. doi: <https://doi.org/10.5220/0009163506770682>

[Conference Paper] Algorithms for automated CHC in self-management of diabetes.

Baptista, C., Cruz, I., Martins, D., Cecilio, J., Carrilho, F., & Furtado, P. (2016, February 3–6). *Algorithms for automated CHC in self-management of diabetes*. Poster presented at the 9th International Conference on Advanced Technologies & Treatments for Diabetes, Milan, Italy.

[Oral presentation] SalivaPrint, algorithms and personalized medicine

Cruz, I., Esteves, E., Fernandes, M., Martins, J., Silva, M., Sousa, S., Rosa, N., Correia, M., Arrais, J. P., & Barros, M. (2017). Bringing saliva into research – SalivaPrint, algorithms and personalized medicine [Oral presentation]. *Ciência 2017*, Centro de Investigação Interdisciplinar em Saúde.

[Oral presentation] Bringing saliva into research – Molecular typing of individuals

Correia, M., Martins, J., Esteves, E., Fernandes, M., Cruz, I., Rosa, N., & Barros, M. (2017). *Bringing saliva into research – Molecular typing of individuals*. *Ciência 2017*, Centro de Investigação Interdisciplinar em Saúde.

[Oral presentation] História da Terra - O Cenozóico

Cruz, I.N.G.; Neves, L. G.S.; Santos, C.M.F., IV Congresso dos Jovens Geocientistas "Água, Terra, Fogo e Ar" , "História da Terra - O Cenozóico", Coimbra: Departamento de Ciências da Terra, Universidade de Coimbra.

Posters

- Igor Cruz, Eduardo Esteves, Monica Fernandes, Nuno Rosa, Maria Jose Correia and Marlene Barros (2018). **SalivaPRINT Toolkit: Development, Challenges and Applications, International Work conference On Bioinformatics And Biomedical Engineering.**
- Sara Sousa, Igor Cruz, Eduardo Esteves, Marlene Barros and Maria J. Correia(2017). **SalivaPrint – A tool for patient stratification in oral health**, OMD PDA Meeting 2017.
- Esteves E, Fernandes M, Cruz I, Esteves F, Rosa N, Correia MJ, Vala H, Barros M (2017). **SalivaPrint: sheep saliva electrophoretic protein profile in a bioinformatics approach. Abstract book of the Cutting Edge Pathology.** 3rd Joint European Congress of the ESVP, ESTP and ECVP: 73 74.
- Cruz, I., Baptista, C., Martins, D., Martins, P., Cecilio, J., Carrilho, F., Furtado, P. (2017). **Comparing Automated Segmentation For Automated Chc In Self-Management Of Diabetes.** In the 10th International Conference on Advanced Technologies & Treatments for Diabetes, Paris, France, 15 18 February, 2017.

PREPRINTS

List of article preprints

- **Gene Expression and Physiological traits in Mice**, Rafael Ramos, Igor Nelson, bioRxiv 2023.05.30.542939; doi: <https://doi.org/10.1101/2023.05.30.542939>
- **Computational Assessment on Catalytic Activity of PET Hydrolase**, Igor Nelson, Rafael Ramos, bioRxiv 2023.05.30.542930; doi: <https://doi.org/10.1101/2023.05.30.542930>
- **Secondary Structure of Physicochemical Clustered Proteins**, Igor Nelson, bioRxiv 2023.05.30.542924; doi: <https://doi.org/10.1101/2023.05.30.542924>
- **A Sequence-Based Mesh Classifier for the Prediction of Protein-Protein Interaction**, Edgar D. Coelho, Igor N. Cruz, André Santiago, José Luis Oliveira, António Dourado, Joel P. Arrais, arXiv:1711.04294, doi: <https://doi.org/10.48550/arXiv.1711.04294>

CREATIVE WORKS

Artistic Painting – Mixed Media

Exhibitions:

- **"Vínculo"** – Hand-painted exhibition, Turism Post, Luso
- **AlbergAR-TE** – Hand-painted exhibition and live painting, Albergaria-a-Velha
- **"Transformação"** – Hand-painted exhibition, "Galeria da Previdência Portuguesa", Coimbra
- **"As Cores do Poeta"** – Hand-painted exhibition, Gedepa Gallery, Pampilhosa

Public Art Projects:

- Two large-scale **public murals**: one in a public garden, another on the exterior of an ATM building.

Writing

Self published books:

- **O Eu Manifesto**, ISBN: [979-8297351691]
- **Alquimia Médica** - A Linguagem da Natureza, ISBN: [979-8297482722]

- **Alquimia Médica** - A Cura Elemental, ISBN: [979-8297518711]
- **Alquimia Interna**, ISBN: [979-8297733978]
- **Harlet Neem - O Despertar do Monólito**, ISBN: [979-8297752382]

Translations:

- **Harlet Neem - Awakening of the Monolith**, ISBN: [979-8298002042]

CONFERENCES AND SEMINARS

09/2018 – 09/2018 Coimbra

2018 Summer School in Computational Biology

■ Core knowledge for modeling biological systems ■ Molecular dynamics for lipid membranes and proteins ■ Protein-ligand interactions and drug discovery ■ Data Science in Biology ■ Transcriptomics to characterize cellular mechanisms ■ Kinetic modeling of metabolic and signaling processes ■ Modeling of physiological systems

09/2016 – 09/2016 Dublin

DrupalCon Dublin

07/2017 – 07/2017 Lisbon

Ciência 2017

DRIVING LICENCE

Driving Licence: B

HOBBIES AND INTERESTS

Meditation Practitioner and Teacher

Experienced meditator with 6 years of solid practice.

Drone Pilot

Certified and Licensed Drone Pilot - EASA - A1 A3 Open Subcategory

Essential Oil Destillation

Running, Sports