



Carlos Calderón Córdova

Scientific Researcher | Associate Professor | Consultant

Specialist in: Industrial Digital Transformation

Innovation and Technology Transfer

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Academic Profile:



Executive Summary

I work as a **Scientific Researcher**, **University Professor**, **Consultant**, and **Executive**. My areas of expertise are: Industrial Digital Transformation, Industry 4.0, Robotics, Automatic Control, Technology Transfer, and Humanitarian Technology.

As a **Scientific Researcher**, I have participated in **28 Research, Development, and Innovation Projects**, equivalent to a period of **22 years**, and an executed budget of **\$1.9 Million**. Among the results of my research work, I am the author of **37 Scientific Publications Indexed** in Scopus / Web of Science, and I have also generated **9 International Patent Applications**. I have given **Keynote Conferences and Presentations** at **40** national and international Scientific Events, held in Ecuador, Spain, Chile, United States, Portugal, among others.

As a **University Professor**, I have **17 years** of experience teaching subjects in **Engineering** and **Master's Degree**, such as Industrial Robotics, Automatic Control, Instrumentation, Automation Systems, Electronic Systems, among others. I have also been the **Director** of **44** undergraduate and Postgraduate **Degree Projects**. In postgraduate programs I have collaborated with five Universities: UTPL, UTA, ESPOCH, UTMACH, and UESalvador.

As an **Executive** and **Directive**, I have **11 years** of experience in **University Management** related to Research and Innovation. At UTPL, I am the **Director** of the **CONSYS** (Control, Automation and Intelligent Systems) Research Group and the **Coordinator** of the **LERAP** Prototyping and Innovation Laboratory. In addition, I have **Directed** 9 R&D+i Projects, over a period of 9.8 years. As external positions to the Academy, I am **President** of the **IEEE Robotics and Automation Society** Ecuador (2023-Present), besides I was **Chair/President** of IEEE **SIGHT** Ecuador (2020-2021), and the **Co-founder** and the **Executive President** of the technology-based company **KRADAC** (2010-2021), with approximate sales of \$1 Million per year.

As a **Consultant**, I have generated and transferred technology and knowledge to the Industrial and Government Sectors. I have worked with the **Technology industry**, Food industry, National Defense and Security, among others. **10+** transfer processes **Academy-Industry** were carried out.

I have received **14 Honors and Awards**, such as “Best Academic Inventor” National Award, awarded by **CEDIA** in 2020 and 2022; “Trajectory of Young Professionals” National Recognition, awarded by **IEEE Ecuador** in 2021; “IEEE Senior Member” International Recognition, awarded by **IEEE** in USA-2020; “Ecuador Innova” Honor, awarded by *Vice Presidency of the Republic of Ecuador* in 2014, among others.



@KarlosKalderonK

1. Education

- **Doctoral Program, Design, Manufacturing and Management of Industrial Projects**, Valencia Polytechnic University, (in progress).
- Master's Degree, **Master in Electromechanical Engineering**, National University of Loja, Ecuador, Graduated in Aug. 2017.
- Master's Degree, **Master in Industry 4.0**, International University of La Rioja, Spain, 2022 – 2023.
- Bachelor's Degree, **Electronics and Telecommunications Engineer**, Magna Cum Laude, Universidad Tecnica Particular de Loja (UTPL), Ecuador, Graduated in Dec. 2006.

Training and Specializations

Featured Training:

- **Robotics applied to Education.**
University of South Florida, 2014, United States.
- **Knowledge Management for Science, Technology and Innovation.**
Ecuadorian Corporation for the Development of Research and the Academy (CEDIA), 2020, Ecuador.
- **Technology Transfer: From research to the market.**
Pontifical Catholic University of Chile, 2020, Chile.
- **Digital Transformation of Business, in Industry 4.0**
Ecuadorian Corporation for the Development of Research and the Academy (CEDIA), 2022, Ecuador.
- **Workshop for the development of Technological Patents.**
Development Bank of Latin America | CAF, 2017, Ecuador.
- **Symposium for Entrepreneurship Educators.**
Babson College, 2018, Ecuador | United States.

2. Research, Development and Innovation Projects

Featured data:

- **28 R&D+I Projects:** Time period, 22.7 years; Executed budget: 1.96 Million dollars.
- **Project types:** 15 **Research** projects, 9 **Innovation** and Technology Transfer projects, and 4 **Community Engagement** projects.
- **Projects Director:** 9 Projects, 9.5 Years, 337 Thousand dollars.
- **External funds:** 11 Projects with **Industry/Government funds**, 4 Projects with **CEDIA funds**.
- **Technology Readiness Level (TRL) of the Projects:** TRL7 = 11 Projects. TRL6 = 8 Projects.
- **Impact on the Sustainable Development Goals SDGs:** SDG9 (Innovation/Industry) = 16 Projects. SDG12 (Responsible production) = 6 Projects.

No.	Project name	Type	Role	Budget	Start date	End date
1	Robotic system applied to automated and reconfigurable cutting, in the heterogeneous production line of clay derivatives, to maximize productivity and quality of the final product.	Research	Director	\$ 16.025,00	01/12/2022	Present
2	IoMT architecture for the acquisition, analysis and prediction of variables and indicators applied to the identification of occupational health and safety risks in high-risk industrial segments.	Research	Director	\$ 80.000,00	1/5/2023	Present
3	Trajectory tracking for industrial robots based on active control.	Research	Participant	\$ 3.500,00	01/12/2022	Present
4	Technological architecture and methodology for the management of the production process of the Cafrilosa food industry.	Innovation	Director	\$ 20.631,00	06/10/2022	Present
5	Industrial Robotics Laboratory: Identification of opportunities and applications of Industrial Robotics in the Ecuadorian productive sector.	Research	Participant	\$ 3.200,00	01/09/2021	01/09/2021
6	High-volume 3D printer prototype for manufacturing with recycled plastics.	Innovation	Director	\$ 7.888,38	1/10/2019	1/4/2020
7	Acquisition of biomechanical, ergonomic, anthropometric, and clinical-postural data to study the cause of spinal deviations.	Research	Director	\$ 22.000,00	15/8/2019	15/8/2020
8	Design and implement a wireless signal receiver and autonomous portable transmitter devices, applied to the technology industry.	Innovation	Participant	\$ 8.397,36	17/6/2019	17/12/2019

3. Scientific Publications: Scopus/Web of Science

Featured data:

- **Researcher impact: h index = 12**, according to Google Scholar. **h index = 9**, according to Scopus.
- **37 Scientific Publications** indexed in Scopus / Web of Science.
- **24 Scientific Publications** indexed as **Main Author**.
- **7 Book Chapters** and Proceedings. **7 Articles** indexed in **Latindex**.

No.	Title	Authors	Journal/Conference Information	Link
1	Deep reinforcement learning algorithm for robotic manipulation tasks in simulated environments	C. Calderon-Cordova and R. Sarango	MDPI Engineering Proceedings	Link
2	Robotic Manipulators: A Control Architecture Approach Based on Deep Reinforcement Learning and Simulation Environments	C. Calderon-Cordova and R. Sarango	2023 3rd International Conference on Electrical, Computer, Communications and Mechatronics Engineering (ICECCME)	Link
3	Deep Reinforcement Learning for autonomous ground vehicle driving in mountainous environments with adverse environmental conditions	R. Sarango and C. Calderon-Cordova	2023 3rd International Conference on Electrical, Computer, Communications and Mechatronics Engineering (ICECCME)	Link
4	Convolutional Neural Network (CNN) and Industrial Robot Arm applied to an automatic coffee bean selection system	C. A. Calderon , J. Robles, S. Morocho and R. Sarango	2022 IEEE International Conference on Automation/XXV Congress of the Chilean Association of Automatic Control, Curicó, Chile, 2022, pp. 1-6	Link
5	Analysis of the optimal performance of several industrial robots in demanding situations using Pareto	R. A. Barrazueta, J. R. Castro, T. Castillo and C. A. Calderon Cordova	2022 IEEE Sixth Ecuador Technical Chapters Meeting (ETCM), 2022, pp. 1-6	Link
6	Low-Cost Measurement for a Secondary Mode S Radar Transmitter	Á. Parra, V. González, J. Jiménez, Á. Blanco, W. Hernandez and C. Calderón-Córdova	IEEE Transactions on Instrumentation and Measurement, vol. 64, no. 12, pp. 3217-3225, Dec. 2015.	Link

4. Patents

Featured data:

- **9 Innovation Projects executed:** University-Industry, University-Company, University-Government.
- **9 International Patent Applications, via PCT-WIPO.**
- **4 Patent Applications as Main Author.**

My Innovation Profile:  **IOI LENS.ORG**

No.	Title	Authors	Information	Link
1	Device for characterising the soil properties of agricultural land.	C. Calderon Cordova , P. Malla Pacheco, D. Irene Robalino, E. Valarezo Valdez and P. Ortiz Viñan.	Patent Application WO2018173016, Jun. 15, 2018.	Link

2	System for interacting with board games for the blind.	C. Calderon Cordova , M. Quiñones Cuenca, B. Zuñiga Torres and E. Pineda Puglla.	Patent Application WO2018173015, Jun. 15, 2018.	Link
3	System and method for preventing accidents caused by the presence of objects on transport routes resulting from natural phenomena.	M. Quiñones Cuenca, C. Calderon Cordova , B. Zuñiga Torres and E. Pineda Puglla.	Patent Application WO2018167749, Jun. 13, 2018.	Link
4	Frequency Meter.	W. Hernandez Perdomo, C. Calderon Cordova , C. Campoverde Rojas and J. Lanchi Ochoa.	Patent Application WO2017089856, Nov. 25, 2015.	Link

5. Academic and Scientific Conferences

Featured data (*For more info check my academic website*):

- **40 Scientific and Academic Conferences presented** at events.
- **21 International scientific events** in which I participated as an **Expositor**.
- **11 Keynote Conferences presented** at Scientific Events.
- **7 Countries as Expositor:** Ecuador, Spain, Chile, United States, Portugal, Mexico, and Colombia.

6. Scientific Committees

Featured data (*For more info check my academic website*):

- **29 Scientific Committees** to review articles in **Journals**, **Academic Events**, and **Projects**.
- **21 Committees** as reviewer of Articles indexed in **Scopus/Web of Science**.

7. Teaching Experience

Featured data (*For more info check my academic website*):

- **17.9 Years of teaching experience** in Engineering and **Master's** degree.
- **73 Courses taught** in Engineering and Master's degree.
- **Courses on:** Industrial Control Systems, Automatic Control, Automation and Industrial Robotics.
- **4 Postgraduate Programs** as an Associate Professor: Master in Control and Automation, Master in Engineering for Industry (Mention in Computer Science), Master in Electric Propulsion, and Master in Software.
- **5 Universities** with which I have collaborated as a professor: UTPL, UTA, ESPOCH, UTMACH, and UESalvador.

8. Awards and Honors

Featured data (*For more info check my academic website*):

- **14 Awards and Honors due to outstanding contributions.**
- **7 Awards** due to outstanding contributions to **Innovation**. **4 Awards** due to outstanding contributions to **Research**.
- **3 Awards** granted by **International Institutions**. **5 Awards** granted by **Government Org.**