Andrès Xavier RUBIO PROAÑO

アンドレス サビエル ルビオ プロアーニョ

PhD in Computer Science · HPC · AI · Computer Architecture



PhD researcher and university lecturer with experience across Ecuador, France, and Japan, specialising in high-performance computing, heterogeneous memory systems, and artificial intelligence.

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Google Scholar | ORCID 0000-0003-1270-9140 | LinkedIn

EDUCATION

Bordeaux, Nouvelle-Aquitaine, France
10.2018 – 10.2021

PhD in Computer Science
Université de Bordeaux

Thesis: Data Placement Strategies for Heterogeneous and Non-Volatile Memories in HPC
Thesis Director: Brice GOGLIN
Ecuador Recognition Credential number: 2501228744

Barcelona, Catalonia, Spain
09.2016 – 03.2018

Master's Degree in Computer Engineering
Universitat Autònoma de Barcelona

Final Project: Development of a Non-Invasive Hybrid-Based Message Logger using RADIC Architecture in Open MPI
Director: Dolores REXACHS
Ecuador Recognition Credential number: 7241199061

Quito, Pichincha, Ecuador
01.2008 – 12.2015

Eng. in Electronics & Networks
Escuela Politécnica Nacional

Final Project: Development of a module that implements the functionalities of the RTPS protocol to be used in real-time distributed applications
Director: Xavier CALDERON
Ecuador Recognition Credential number: 1001-16-1440799

PROFESSIONAL, RESEARCH & ACADEMIC EXPERIENCE

Quito, Pichincha, Ecuador
04.2024 –

Associate Professor
Indoamérica Technological University (UTI)

Faculty of Engineering (FING) / Mechatronics and Interactive Systems Research Centre (MIST)

Computer Architecture, High Performance Computing, Artificial Intelligence
AI Transformation Lead, 09.2026 –: agentic AI, machine-learning and deep-learning model development
Introduction to Operating Systems @ Information Technology Engineering
Operating Systems Administration @ Information Technology Engineering
Computer Architecture @ Information Technology Engineering
Structured Programming @ Industrial Engineering
Machine Learning @ Master's Degree in Robotics and Interactive Systems
Data Science @ Information Technology Engineering
Acting Coordinator, Information Technology Engineering programme, 09.2024 – 10.2024
Acting Coordinator, Master's in Big Data and Data Science, 09.2024 – 10.2024
Acting Coordinator, Master's in Cybersecurity, 09.2024 – 10.2024

Samborondón, Guayas, Ecuador
07.2026 –

Invited Professor
Universidad de Especialidades Espíritu Santo (UEES)

Machine Learning @ Master's Degree in Artificial Intelligence
Natural Language Processing @ Master's Degree in Artificial Intelligence

Online, Japan
07.2024 –

Research Fellow
National Research and Development Institute RIKEN

Center for Computational Science (R-CCS)

Research on accelerating the training of surrogate models using deep learning

Quito, Pichincha, Ecuador
06.2024 –

Invited Professor

Universidad Iberoamericana (UNIBE)

Machine Learning @ Big Data Master's Degree (seasonal sessions: 06.2024 – 07.2024; 09.2024 – 10.2024; 05.2025 – 06.2025)

Kobe, Hyōgo, Japan
11.2021 – 03.2024

Postdoctoral Researcher

National Research and Development Institute RIKEN

Center for Computational Science (R-CCS)

Research on heterogeneous memory systems, including DRAM and NVM
Accelerating the training of surrogate models using deep learning
Participation in the technical feasibility study for the next FugakuNEXT supercomputer

Bordeaux, Nouvelle-Aquitaine, France
10.2018 – 10.2021

PhD Researcher

National Institute for Research in Computer Science and Automation (INRIA)

Topology-aware system-scale data management for high-performance computing Team (TADAAM)

Research on performance, reliable and productive frameworks for heterogeneous memory systems, including NVM, DRAM and HBM

Bordeaux, Nouvelle-Aquitaine, France
03.2020 – 12.2021

Instructor

Bordeaux Institute of Technology (Bordeaux INP)

ENSEIRB-MATMECA

Practical sessions of the System Programming course (seasonal sessions: 03.2020 – 12.2020; 03.2021 – 12.2021)

Washington, D.C., District of Columbia, United States
06.2017 – 08.2017

Regular Summer Intern

Inter-American Development Bank

Fiscal & Municipal Dev Principal Spec., IFD/FMM

Literature review on technologies applied in the fiscal sector, including blockchain, big data, machine learning and the shared economy

Remote
04.2016 – 12.2016

Hardware Engineer

Sinnply Blue

Design and development of prototypes using BLE and Arduino boards

Quito, Pichincha, Ecuador
09.2014 – 08.2015

Technical Research Assistant

Ecuadorian Corporation for the Development of Research and Academia (CEDIA)

Technical assistance in the CEPRA VIII-2014-06 project: Real-Time Middleware Based on the Publish/Subscribe model

Quito, Pichincha, Ecuador
03.2014 – 05.2014

Android Developer

Hortaleg La Huerta S.A.

Development of an Android application that supervises a network of sensors for crops

THESIS SUPERVISION

2026

Surrogate model for air quality in Quito: Forecasting and early warning

Universidad Tecnológica Indoamérica

Student: Jonathan Alexander Cañar Quishpe
Information Technology Engineering (undergraduate)
Supervisor: Andrés Xavier Rubio Proaño

2026

Design of a digital twin of a rice packaging machine

Universidad Tecnológica Indoamérica

Students: Kiany Scarleth Cárdenas Burbano; Bryan David Toaza Yandún
Information Technology Engineering (undergraduate)
Supervisor: Andrés Xavier Rubio Proaño

2025

Predicting traffic accident severity in Quito using artificial intelligence: A binary classification approach

Universidad Tecnológica Indoamérica

Student: Jean Kevin Morillo Hernández
Master's in Big Data and Data Science
Supervisor: Andrés Xavier Rubio Proaño

2025

Using artificial intelligence for sentiment analysis of public perception on the Ecuadorian National Police's Facebook page

Universidad Tecnológica Indoamérica

Student: María Mercedes Murillo Coll
Master's in Big Data and Data Science
Supervisor: Andrés Xavier Rubio Proaño

PUBLICATIONS

1. Juan Francisco Pabón-Alajo and Andrès Rubio Proaño. Beyond accuracy: Generalisation, bias, and robustness in deep learning for facial emotion recognition. Revista Tecnológica - ESPOL, 38(E1):31–49, 2026. doi:10.37815/rte.v38nE1.1605.

2. Andrès Rubio Proaño, Christian Salamea-Palacios, Jorge Banet, and Xavier Calderón-Hinojosa. An ai-ready ecuadorian sign language corpus. In Information and Communication Technologies (TICEC 2026), Communications in Computer and Information Science, pages 94–108. Springer Nature Switzerland, 2026. doi:10.1007/978-3-032-41327-7_7.

3. Carmen Godínez-Oliva, Luis Pusey-Alvarado, Nelson Díaz-Álvarez, Andrès Rubio Proaño, and Janio Jadán-Guerrero. Enhancing decision-making through human–ai synergy in smarter and fairer recruitment. In Human Interface and the Management of Information: Thematic Area, HIMI 2026, Held as Part of the 28th HCI International Conference, HCII 2026, Montreal, QC, Canada, July 26–31, 2026, Proceedings, Part II, pages 269–280. Springer Nature, 2026. doi:10.1007/978-3-032-29178-3_17.

4. Hugo Arias-Flores, Mario Piedra-Ansatuña, Mireya Zapata, Andrès Rubio Proaño, and Andrés Palacio-Fierro. Low-cost interfaces and technological accessibility: A human–computer interaction approach for the inclusion of individuals with motor disabilities. In Universal Access in Human-Computer Interaction: 20th International Conference, UAHCI 2026, Held as Part of the 28th HCI International Conference, HCII 2026, Montreal, QC, Canada, July 26–31, 2026, Proceedings, Part I, page 3. Springer Nature, 2026. doi:10.1007/978-3-032-29653-5_1.

5. Amarjit Singh, Kento Sato, Kohei Yoshida, Kentaro Uesugi, Yasumasa Joti, Takaki Hatsui, and Andrès Rubio Proaño. Roix-comp: Optimizing x-ray computed tomography imaging strategy for data reduction and reconstruction. In Proceedings of the Supercomputing Asia and International Conference on High Performance Computing in Asia Pacific Region, SCA/HPCAsia '26, page 351–361, New York, NY, USA, 2026. Association for Computing Machinery. doi:10.1145/3773656.3773665.

6. Juan Segura, Andrès Rubio Proaño, Edison Zambrano, and Gary Chanataxi. Innovación sostenible: sistema fotovoltaico de respaldo para una central hidroeléctrica en Ecuador. In Generación del conocimiento para un mundo sostenible: transformaciones sociales, educativas y ambientales, volume 2, page 359. Editorial de la Universidad Tecnológica Indoamérica, 2025.

7. Joel Segura, Andrés Rubio Proaño, and David Chapi. Design of a backup system powered by renewable energy sources for the operation of a textile industry in quito. IET Conference Proceedings, 2025:90–94, 2025. URL: https://digital-library.theiet.org/doi/abs/10.1049/icp.2025.1250, doi:10.1049/icp.2025.1250.

8. Andrès Rubio Proaño and Kento Sato. Understanding power consumption metric on heterogeneous memory systems. In 2023 IEEE 29th International Conference on Parallel and Distributed Systems (ICPADS), pages 2859–2862, 2023. doi:10.1109/ICPADS60453.2023.00408.

9. Clément Foyer, Brice Goglin, and Andrès Rubio Proaño. A survey of software techniques to emulate heterogeneous memory systems in high-performance computing. Parallel Computing, 116:103023, 2023. doi:10.1016/j.parco.2023.103023.

10. Brice Goglin and Andrès Rubio Proaño. Using performance attributes for managing heterogeneous memory in hpc applications. In 2022 IEEE International Parallel and Distributed Processing Symposium Workshops (IPDPSW), pages 890–899. IEEE, 2022. doi:10.1109/IPDPSW55747.2022.00145.

11. Andrès Rubio Proaño. Exposer les caractéristiques des architectures à mémoires hétérogènes aux applications parallèles. In COMPAS 2020-Conférence francophone d'informatique en Parallélisme, Architecture et Système, 2020. URL: https://hal.science/hal-02639607.

12. Edgar A León, Brice Goglin, and Andrès Rubio Proaño. M&mms: navigating complex memory spaces with hwloc. In Proceedings of the International Symposium on Memory Systems, pages 149–155, 2019. doi:10.1145/3357526.3357546.

13. Brice Goglin and Andrès Rubio Proaño. Opportunities for partitioning non-volatile memory dimms between co-scheduled jobs on hpc nodes. In European Conference on Parallel Processing, pages 82–94. Springer, 2019. doi:10.1007/978-3-030-48340-1_7.

INTERNSHIPS

Quito, Pichincha, Ecuador
07.2011 – 08.2011

Intern
IRS
LDAP configuration for users

COURSES

Loja, Loja, Ecuador
24.11.2014 – 28.11.2014
40h

Técnicas Avanzadas de Middleware
CEDIA & UTPL

Washington, D.C., District of Columbia, United States
03.08.2017
10h

2017 Summer Internship Innovation Experience
cocolab & IDB
Summer Internship Innovation Experience 2017

Bordeaux, Nouvelle-Aquitaine, France
03.12.2018
40h

Français Langue Etrangère/DOCTOFLE/French courses for PhD
Université de Bordeaux
French as a foreign language for PhD students

Online
17.01.2019
15h

Research Integrity in Scientific Professions
France Université Numérique
Research integrity in scientific professions

Bordeaux, Nouvelle-Aquitaine, France
12.03.2019 – 14.03.2019
6h

Introduction to statistic tests
Université de Bordeaux
Introduction to statistical tests

Bordeaux, Nouvelle-Aquitaine, France
12.03.2019 – 14.03.2019
18h

Calcul Parallèle avec les ressources de calcul du Mésocentre de Calcul Intensif Aquitain
Université de Bordeaux
Parallel computing with the computing resources of the Aquitaine high-performance computing centre

Bordeaux, Nouvelle-Aquitaine, France
20.05.2019
12h

Droit du numérique: logiciels et données à caractère personnel

Université de Bordeaux

Digital law: software and personal data

Fiuggi, Italy
14.07.2019 – 19.07.2019
27h

Fifteenth International Summer School on Advanced Computer Architecture and Compilation for High-Performance and Embedded Systems (ACACES2019)

HiPEAC & Ghent University

Fifteenth International Summer School on Advanced Computer Architecture and Compilation for High-Performance and Embedded Systems: distributed-memory programming and algorithms; memory technology and architecture; memory systems for the heterogeneous era; reconfigurable multiprocessor systems-on-chip

Bordeaux, Nouvelle-Aquitaine, France
12.02.2020
12h

Introduction to modelling, simulation and data science in oncology

Université de Bordeaux

Introduction to modelling, simulation and data science in oncology

Online
06.07.2020 – 17.07.2020
10h

Sixteenth International Summer School on Advanced Computer Architecture and Compilation for High-Performance and Embedded Systems (ACACES2020)

HiPEAC

Sixteenth International Summer School on Advanced Computer Architecture and Compilation for High-Performance and Embedded Systems: networks-on-chip and RISC-V from open ISA to open architecture and open hardware

Bordeaux, Nouvelle-Aquitaine, France
12.01.2021
9h

Réalités Mixtes: Immersion et interaction dans les environnements physico-numériques

Université de Bordeaux

Mixed realities: immersion and interaction in physical-digital environments

Bordeaux, Nouvelle-Aquitaine, France
01.01.2021
6h

Sensibilisation à l'écologie et à l'impact du numérique

Université de Bordeaux

Awareness of ecology and the impact of digital technology

Bordeaux, Nouvelle-Aquitaine, France
08.06.2021
10h

Theory of Machine Learning

Université de Bordeaux

Theory of machine learning

Bordeaux, Nouvelle-Aquitaine, France
21.06.2021
10h

Introduction to Reinforcement Learning

Université de Bordeaux

Introduction to reinforcement learning

Quito, Pichincha, Ecuador
08.10.2024
60h

Scientific Research

SCImago

Scientific Research Training 2024

Quito, Pichincha, Ecuador
19.06.2025
40h

Specialised Training in Intellectual Property

CEDIA

Specialised Training in Intellectual Property

AWARDS AND SUPPORT

Italy
15.06.2026

EU-CELAC delegate sponsored by the European Commission for a technical visit to the AREA Science Park in Trieste to exchange knowledge on research infrastructures
European Commission

United States
29.09.2025

SIGHPC Early Career Travel Grant for attending SC25
SIGHPC-ACM

CREDENTIALS

Quito, Ecuador
11.07.2022 – 11.07.2027

Ecuadorian Researcher Accreditation
Secretaría de Educación Superior, Ciencia, Tecnología e Innovación (SENESCYT)
Assistant Researcher 1, 11.07.2022 – 15.08.2023
Assistant Researcher 2, 15.08.2023 – 11.07.2027

27.02.2024

Member
Association for Computing Machinery (ACM)
Membership: 8102176

TALKS

Remote
2024
Invited

Performance metrics for managing memory in supercomputers
Universidad de Cuenca

Remote
2023
Invited

Heterogeneous Memory Systems
Yachay Tech

Remote
2023
Invited

Performance metrics for managing heterogeneous memory in HPC applications
ADAC Seminar

Remote
2023
Invited

Power-performance analysis on heterogeneous memory systems
R-CCS Café

Paris, Île-de-France, France
2023

Identifying suitable storage targets for surrogate model training on heterogeneous storage infrastructures
CEA-RIKEN Workshop 2023-1

Kobe, Hyōgo, Japan
2022

Accelerating convergence of simulation and AI with hierarchical memory/storage systems
CEA-RIKEN Workshop 2022-1

Remote
2022

Using performance attributes for managing heterogeneous memory in HPC
PDSEC - IPDPS22

Remote
2022

Determining criteria for data allocation in heterogeneous memory systems for HPC applications
The 4th R-CCS International Symposium

Remote
2021

Exposing the characteristics of heterogeneous memory architectures to parallel applications
JLESC 2021

Göttingen, Lower Saxony, Germany
2019

Opportunities for partitioning non-volatile memory DIMMs between co-scheduled jobs on HPC nodes
Coloc - Euro-Par 2019

Bordeaux, Nouvelle-Aquitaine, France
2019

NVRAM, NVDIMM, NVMe, DAX: What? How?
Inria

REVIEWER

11.2026

SC26
Artifact Description / Artifact Evaluation reproducibility committee

07.2026 –

TICEC 2026
Reviewer

03.2026 –

SBAC-PAD 2026
Reviewer

11.2025

SC25
Artifact Description / Artifact Evaluation reproducibility committee and posters committee

12.2023

CEA-RIKEN HPC School 2023
Lecture on AI frameworks on Fugaku

11.2024

SC24
Artifact Description / Artifact Evaluation reproducibility committee

08.2023

ICPP 2023
Paper reviewer

11.2023

SC23
BoF reviewer

09.2022

IEEE Cluster 2022
Paper reviewer

POSTERS

Kobe, Hyōgo, Japan
2024

Power consumption in heterogeneous memory systems
The 6th R-CCS International Symposium

Hainan, China
2023

Understanding the power consumption metric in heterogeneous memory systems
The 29th IEEE International Conference on Parallel and Distributed Systems 2023

Bordeaux, Nouvelle-Aquitaine, France
2023

Memory consumption in heterogeneous memory systems
JLESC 15th

Kobe, Hyōgo, Japan
2023

Power consumption metric in heterogeneous memory systems
The 5th R-CCS International Symposium

Washington, D.C., District of Columbia, United States
2019

M&MMs: Navigating complex memory spaces with hwloc
R-CCS Café

PROJECTS

2025 –

In-situ techniques for training surrogate models
Member · UTI, RIKEN

2025 –

Development of an Ecuadorian sign language interpretation system based on artificial intelligence to improve communication for deaf people in Ecuador
Project Director · UTI, CEDIA, EPN, UPS, PUCE

2022 – 2023

Accelerating surrogate modelling training process
Member · RIKEN and CEA

2021

Heuristics for heterogeneous memory (H2M)
Member · INRIA and RWTH Aachen University

2014 – 2015

Real-time middleware based on the publish/subscribe model
Member · Escuela Politécnica Nacional, Universidad Técnica Particular de Loja and Universidad Politécnica Salesiana

LANGUAGES

Native	**Spanish**
Advanced	**English**
Advanced	**French**
Intermediate	**Catalan**
Beginner	**Japanese**

REFERENCES

Xavier CALDERÓN
Escuela Politécnica Nacional (EPN)
Full Professor
xavier.calderon@epn.edu.ec

Brice GOGLIN
Institut National de Recherche en Informatique et en Automatique (Inria)
Research Director
brice.goglin@inria.fr

Kento SATO 佐藤 賢斗
National Research and Development Institute RIKEN （理研）
Team Leader
kento.sato@riken.jp