RAÚL DE LA FUENTE

[Email](#) | [Website](#) | [GitHub](#) | [LinkedIn](#)

Santiago, Chile

SUMMARY

I am a Computer Science and Engineering student at the University of Chile with research experience in applied cryptography, embedded software, IoT, and machine learning. Motivated by the challenges in IoT and embedded systems, I aspire to pursue a career in computer architecture, leveraging my expertise to advance hardware security and develop domain-specific accelerators through hardware-software co-design.

EDUCATION

University of Chile *Fall 2023 - Present*
M.Sc. | *Computer Science* *Santiago, Chile*
Advisors: Prof. Alejandro Hevia and Prof. Luciano Radrigan

University of Chile *Fall 2022 - Present*
P.Eng. | *Computer Science and Engineering* *Santiago, Chile*
Advisors: Prof. Alejandro Hevia and Prof. Luciano Radrigan

University of Chile *Fall 2018 - Fall 2022*
B.Eng. | *Computer Science and Engineering* *Santiago, Chile*

PUBLICATIONS

[Enhancing Predictive Maintenance in Mining Mobile Machinery through a TinyML-enabled Hierarchical Inference Network](#). *Raúl de la Fuente,* Luciano Radrigan and Anibal S Morales. In *IEEE Access* (***under review***).

[Poster abstract: Hands-on Evaluation of Kinéis Satellite IoT Technology](#). *Raúl de la Fuente and* Thomas Watteyne. In *Proceedings of the 23rd International Conference on Information Processing in Sensor Networks* (**IPSN '23**).

RESEARCH EXPERIENCE

CLCERT Group, University of Chile *Santiago, Chile*
Research Assistant | Advisor: Prof. Alejandro Hevia *January 2022 - Present*

- Contributed to the Psifos voting system, leveraging homomorphic encryption and zero-knowledge proofs to ensure secure and verifiable electronic elections.
- Migrated the system from traditional finite-field cryptography to elliptic curve cryptography, enhancing security and computational efficiency.
- Currently optimizing the distributed key generation protocol used by election trustees to reduce computational overhead and enable participation from resource-constrained embedded devices.

Dept. of Electrical Engineering, University of Concepción *Concepción, Chile*
Research Assistant | Advisor: Prof. Luciano Radrigan *January 2022 - Present*

- Deployed a cyber-physical system for real-time monitoring of industrial processes using on-device machine learning for anomaly detection and failure prediction.
- Mainly responsible for: (i) Implementing the nodes' firmware in C/C++ , (ii) Designing and optimizing neural networks for embedded devices, and (iii) Conceptualizing an algorithm to dynamically switch between cloud and edge inference based on network conditions.

AIO Team, INRIA *Paris, France*
Research Intern | Advisor: Prof. Thomas Watteyne *January 2023 - April 2023*

- Deployed a low-power mesh IoT network based on Dust Networks' SmartMesh IP technology for environmental monitoring in urban areas.
- Conducted a hands-on evaluation of a state-of-the-art satellite communication module for IoT applications, assessing its performance and energy efficiency.

NIC Chile Research Labs *Santiago, Chile*
Research Intern | Mentor: Eduardo Riveros *January 2021 - March 2021*

- Pentested the internal networks of NIC Chile and the Faculty of Physical and Mathematical Sciences at the University of Chile, identifying and reporting critical vulnerabilities.
- Developed a plugin for the Nmap network scanner to identify vulnerable IoT devices within nested networks, enabling automated scanning and reporting for security audits.

ACTIVITIES

November'24	Presented talk 'Enhancing Predictive Maintenance in Mining Mobile Machinery through a TinyML-enabled Hierarchical Inference Network' at the CS Master's Seminar, University of Chile.
2023 - 2024	Served as Teaching Assistant for both the Internet of Things Systems Design and Web Application Development courses at University of Chile.
May'23	Presented the poster 'Hands-on Evaluation of Kinéis Satellite IoT Technology' at IPSN '23, San Antonio, TX.
January'23	Assisted to the OpenSwarm project launch event at INRIA, Paris, France.
2022	Participated in over 250 elections powered by the Psifos voting system, working with both internal departments of the University of Chile and governmental institutions.
2021	Served as Teaching Assistant for the Systems Programming course at University of Chile.

AWARDS

- Recipient of the Master's in CS Scholarship from the University of Chile for the academic years 2023-2024.
- Recipient of the Academic Excellence Award from the University of Chile for the years 2018-2022.
- Awarded a Fully-Funded First Certificate in English (FCE) exam by Manquecura High School in 2017.

TECHNICAL SKILLS

Software: Docker | Git | TensorFlow | FastAPI | Django | React | Flutter
Hardware: ESP32 | nRF52 | Arduino | Raspberry Pi | *Currently learning FPGA*
Programming: C/C++ | Python | Rust | Assembly RISC-V | Java/Scala