

Francisco Rau

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PROFILE

B.Eng. degree in Electrical and Electronic Engineering from Universidad de Santiago de Chile in 2009, the B.Sc. degree in Industrial Engineering from Universidad Tecnica Federico Santa Maria in 2017, and the M.Sc. degree in Electrical Engineering from Universidad de Santiago de Chile in 2023. He has held technical and leadership roles in the telecommunications industry in Chile and Ecuador, deploying 5G NSA, MPLS/IP core network expansion, and backhaul network rollout for service providers.

He is currently pursuing the Ph.D. degree in Electronic Engineering at the University of Valencia, Spain, and is a Marie Skłodowska-Curie Doctoral Fellow at MaxLinear, Spain, participating in the HORIZON-MSCA-2022-DN-01 project titled Optical and Wireless sensors Networks for 6G scenarios (OWIN6G), focusing on researching efficient MAC scheduling for ultra-dense wireless networks based on 802.11 standards.

His research interests include artificial intelligence and machine learning applied to telecommunications, energy efficiency, network traffic forecasting, and WiFi standards.

EDUCATION

- **Universidad de Santiago de Chile** Santiago, Chile
Ph.D in Electronic Engineering 2024 - 2027
- **Universidad de Santiago de Chile** Santiago, Chile
M.Sc. in Electrical Engineering 2021 - 2023
- **Pontificia Universidad Católica de Chile** Santiago, Chile
Solar Energy Diploma Program - School of Engineering 2017
- **Universidad Técnica Federico Santa María** Santiago, Chile
B.Sc. in Industrial Engineering 2013 - 2017
- **Universidad de Santiago de Chile** Santiago, Chile
B.Eng. in Electrical Engineering with a specialization in Electronics and Telecommunications 2005 - 2009

SKILLS

- **Languages:** Python, Matlab, C++
- **Frameworks:** Scikit, TensorFlow, Keras, Pandas
- **Platform's:** Linux, Windows, Arduino, Raspberry, NREL SAM, PV Syst

PROFESSIONAL EXPERIENCE

- **Maxlinear Hispania S.L.** Valencia, Spain
Communications Systems PhD Researcher (Full-time) March 2024 - present
 - **Role:** PhD Researcher focusing on studying efficient MAC scheduling for ultra-dense wireless sensor networks based on 802.11 standards.
- **Entel S.A.** Santiago, Chile
Senior Project Manager for Services and Networks (Full-time) July 2015 - March 2024
 - **Role:** Project Management in projects related to the Core Data, Core Voice, and Packet Core areas of Entel Chile, with international vendors such as Huawei, Cisco, and E///.
 - **Achievements:** Successful implementation of highly complex projects: 5G NSA, SDN Network, MPLS/IP Core Network Expansion, CDN Infrastructure in Data Centers for Google, Facebook, Netflix, Microsoft, and Amazon.
- **Entel S.A.** Santiago, Chile
Project Manager for Backhaul and Access Network (Full-time) April 2013 - June 2015
 - **Role:** Project Management in projects related to Access and Backhaul in FO, MMOO, and satellite technologies for 4G/LTE mobile sites and corporate clients.
 - **Achievements:** Successful implementation of the transport network and customer access nodes for the Ministry of Health in Chile, Time to Market < 1 year.
- **Aseta, Aso. de Telecom. de la C. Andina** Quito, Ecuador
FTTH Consultant (Full-time) November 2011 - October 2012
 - **Role:** Consultancy and advisory services in FTTH networks to CNT EP (National Telecommunications Corporation)

- **Achievements:** Mindset change in the way projects < 6 months are designed and implemented. Training and development of different regulations and procedures related to the change from copper to fiber optic technology.

- **Entel S.A.** Santiago, Chile
Project Engineer (Full-time) *September 2009 - November 2011*
 - **Role:** Management and control of G-PON, MMOO, and FO projects, for the growth and expansion of the 3G/4G mobile and fixed network.
 - **Achievements:** Technical Leader of the G-PON Commercial Project (FTTB), the only one project in LATAM implementing around 1000 buildings in less than a year.
- **Tu Ves S.A.** Curacaví, Chile
Satellite Station Engineer (Full-time) *March 2009 - September 2009*
 - **Role:** Responsible for the operation of the Satellite Digital TV System (HeadEnd and UpLink), in charge of maintaining, detecting faults, and controlling different systems (reception, encryption, encoding, and satellite transmission).
- **Telmex S.A.** Santiago, Chile
Operation and Maintenance Engineer (Full-time) *January 2008 - April 2008*
 - **Role:** Professional Training, O&M of the Satellite Ground Station, Uplink and Downlink in C-band and Ku-band.

ACADEMIC EXPERIENCE

- **Optical and Wireless sensors Networks for 6G scenarios (OWIN6G)** Valencia, Spain
Doctoral Researcher (Full-Time) *March 2024 - present*
 - Marie Skłodowska-Curie Doctoral in the HORIZON-MSCA-2022-DN-01 project called Optical and Wireless sensors Networks for 6G scenarios (OWIN6G) - <https://owin6g.eu/>
- **Instituto de Telecomunicações** Aveiro, Portugal
Visiting Researcher (Full-Time) *February 2025 - March 2025*
 - Researcher in traffic classification for networks using Incremental Learning.
- **DSDC Group** Valencia, Spain
Visiting Researcher (Full-Time) *October 2024 - December 2024*
 - Researcher in AI-driven embedded systems, focusing on real-time data processing, machine learning, and hardware acceleration.
- **Center for Multidisciplinary Research in Telecommunications Technologies (CIMTT)** Santiago, Chile
Researcher (Part-time) *March 2021 - July 2023*
 - Research related to traffic prediction technologies, neural networks, and machine learning, with a focus on telecommunications operators.
- **Duoc UC** Santiago, Chile
Engineering Lecturer (Part-time) *March 2018 - July 2018*
 - Professor at the School of Engineering for the Electrical and Industrial Automation programs, teaching courses on Applied Physics, Implementation of Industrial Mechanisms, and Human Resources Management.
- **Aseta, Aso. de Telecom. de la C. Andina** Ecuador, Quito
Instructor (Part-time) *March 2012 - August 2012*
 - Training of technical personnel from CNT EP in the design and deployment of optical fiber (ODN) and installation of OLTs for Ecuador's pilot and national plans, through G-PON technology.

ACADEMIC PUBLICATIONS

- **Francisco Rau**, Ismael Soto, Pablo Adasme, David Zabala-Blanco, Cesar A. Azurdia-Meza, "Network Traffic Prediction Using Online-Sequential Extreme Learning Machine", 3rd South American Colloquium on Visible Light Communications, (SACVLC 2021), Toledo, Brazil, 11-12 November, 2021. <https://doi.org/10.1109/SACVLC53127.2021.9652247>
- **Francisco Rau**, Ismael Soto, David Zabala-Blanco, "Forecasting Mobile Network Traffic based on Deep Learning Networks", IEEE Latin-American Conference on Communications, (LATINCOM 2021), Santo Domingo, Dominican Republic, 17-19 November, 2021. <https://doi.org/10.1109/LATINCOM53176.2021.9647788>
- Raul Zamorano-Illanes, María Constanza Estela, Ismael Soto, Muhammad Ijaz, **Francisco Rau**, "MIMO QAM indoor VLC using polar codes for low-cost emitters and FPGA receiver", 4th West Asian Symposium on Optical and Millimeter-Wave Wireless Communications, (WASOWC 2022), Tabriz, Iran, Islamic Republic of, 12-13 May, 2022. <https://doi.org/10.1109/WASOWC54657.2022.9798443>

- Raul Zamorano-Illanes, Ismael Soto, Wilson Alavia, Verónica Garcia, Pablo Adasme, **Francisco Rau**, “Remote detection of COVID-19 using 5G and AI”, 13th International Symposium on Communication Systems, Networks and Digital Signal Processing, (CSNDSP 2022), pp. 395–400, Porto, Portugal, 20-22 July, 2022. <https://doi.org/10.1109/CSNDSP54353.2022.9907995>
- **Francisco Rau**, Ismael Soto, David Zabala-Blanco, Cesar Azurdia-Meza, Muhammad Ijaz, Sunday Ekpo and Sebastian Gutierrez, “A Novel Traffic Prediction Method Using Machine Learning for Energy Efficiency in Service Provider Networks”, Sensors 2023, 23, 11, 4997. <https://doi.org/10.3390/s23114997>
- **Francisco Rau**, Carlos Herranz, Iñaki Val, Petia Georgieva, Joaquin Perez, “A Novel Flow-Based Online Network Traffic Classification Using Machine Learning”, TechRxiv 2025. <https://doi.org/10.36227/techrxiv.175459507.75164419/v1>
- **Francisco Rau**, Carlos Herranz, Iñaki Val, Joaquin Perez, “LSTM-Based Traffic Prediction for 5G Mobile Network Operator”, 2025 International Conference on Software, Telecommunications and Computer Networks (SoftCOM), Split, Croatia, 18-20 September, 2025. <https://doi.org/10.23919/SoftCOM66362.2025.11197406>
- **Francisco Rau**, Luis Miguel Giraldo, Carlos Herranz, Joaquin Perez, Iñaki Val, Raimundo Garcia, “Implementing a Traffic Classifier on Embedded SoC Systems with Deep Learning Processor Unit”, 2025 International Conference on Software, Telecommunications and Computer Networks (SoftCOM), Split, Croatia, 18-20 September, 2025. <https://doi.org/10.23919/SoftCOM66362.2025.11197409>

DATASETS

- **Francisco Rau**, Carlos Herranz, Iñaki Val, and Joaquin Perez, “VLC Data: A Multi-Class Network Traffic Dataset Covering Diverse Applications and Platforms”, EU Open Research Repository, Zenodo, April 2025. <https://doi.org/10.5281/zenodo.15121418>

CERTIFICATIONS AND TRAININGS

- Research Colloquium, NextGCom2025 - Greece, October 2025.
- Training - The Double Nature of ML/AI in Cybersecurity, Albania, June 2025.
- Python Workshop for Data Science, Huawei Enterprise Service - September 2022.
- Innovation Management Certified Professional (IMCP) - Marzo, 2021.
- Advanced Programming Tools in Python for Data Processing, PUC - November 2020.
- Scrum Foundation Professional Certified (SFPC) #42152609 - July, 2020.
- Project Management Professional Certification (PMP)® #2746245 - January, 2020.
- Proof of Concept Testing for Huawei NE-9000 Router Series, Huawei, Beijing, China - July 2018.
- iManager U2000 DSLAM MA5616 Series O&M Training, Huawei, Brasil - March, 2014.
- DSLAM SmartAX MA5616 Series 2nd Line Maintenance Training, Huawei, Brasil - March, 2014.
- LTE for Entel Technical Area, University of Chile - August 2013.
- Fault Tolerance in Industrial Wireless Sensor Networks, UACH Valdivia - November 2008.

AWARDS AND RECOGNITIONS

- Marie Skłodowska-Curie Doctoral Fellow, 2024
- First Place in the M.Sc. in Electrical Engineering program, USACH - November 2023.
- Academic performance within the Top 10 of Industrial Engineering graduates, UTFSM - November 2017.
- First Place in B.Eng. Electrical Engineering, USACH - September 2009.
- First Place in High School Diploma at Eugenio María de Hostos School, La Reina - December 2004.

LANGUAGES

- **Native Language:** Spanish
- **Second Language:** English