

# SERGIO GIMÉNEZ ANTÓN

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## Education

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- UPC - Computer Architecture Department** **2024 – 2027 (Expected)**  
PhD, Computer Systems Networking and Telecommunications  
*Research Focus: Design and simulation of the 6G Recursive User Plane Architecture (6G-RUPA) for next-generation mobile networks.*  
link: [6grupa.com](http://6grupa.com)
- UPC - ETSETB, Barcelona, Spain** Master's Degree in Advanced Telecommunication Technologies **2020 – 2022**
- Aristotle University of Thessaloniki (AUTH), Greece** Diploma Thesis **Feb 2020 – Jul 2020**  
Design, setup and implementation of a low-cost prototype system to evaluate the performance of a transcutaneous optical link
- UPC - ETSETB, Barcelona, Spain** **2015 – 2020**  
Bachelor Degree, Computer Systems Networking and Telecommunications

## Research Experience

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- i2CAT FOUNDATION** *R&D Engineer* **Sep 2020 – present**
- Designing and implementing recursive network paradigms for different fields: Quantum networks, 5G/6G networks and virtualised networks (container and virtual network functions).
  - Working within the automation of the european GÉANT network.
  - Working with and extending virtualization technologies such as QEMU/KVM, Docker and Kubernetes.
  - Working with implementation of APIs to implement "Network as a Service" paradigm in telco-like networks.
- Aristotle University** *Research Engineer* **Feb 2020 – Jul 2020**  
↔ Wireless Communications Systems Group *Thessaloniki, Greece*
- Developing the diploma thesis: Development of a low-cost prototype to evaluate the performance of Transdermal Optical Links.
- i2CAT FOUNDATION** *Research Engineer Intern* **Aug 2019 – Jan 2020**
- Working within the RINA architecture background developing a P4 implementation of the RINA data transfer and data transfer control elements.

## Publications

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- Sergio Giménez-Antón, Eduard Grasa, Jordi Perelló, and Andrés Cárdenas. 6g-rupa: a flexible, scalable, and energy-efficient user plane architecture for next-generation mobile networks. *Computers*, 13(8):186, 2024.
- Javier Jordán-Parra, Sergio Giménez-Antón, Estela Carmona-Cejudo, Marina Garcia-Romero, and Eduard Grasa. Position paper: on the application of recursive inter-network architecture to the future quantum-enabled internet. In *ICC 2024-IEEE International Conference on Communications*, pages 3628–3633. IEEE, 2024.
- David Sarabia-Jácome, Sergio Giménez-Antón, Athanasios Liatifis, Eduard Grasa, Marisa Catalán, and Dimitrios Pliatsios. Progressive adoption of rina in iot networks: Enhancing scalability and network management via sdn integration. *Applied Sciences*, 14(6):2300, 2024.
- Angel Martin, Pablo Losada, Carolina Fernández, Mikel Zorrilla, Zaloa Fernandez, Alvaro Gabilondo, Juncal Uriol, Felipe Mogollon, Mikel Serón, Michalis Dalgitsis, et al. Open-verso: a vision of 5g experimentation infrastructures, hurdles and challenges. *arXiv preprint arXiv:2308.14532*, 2023.
- Sergio Giménez Antón, Eduard Grasa, Carolina Fernández, and Muhammad Shuaib Siddiqui. Rina-based virtual networking solution for distributed vnfs: Prototype and benchmarking. In *2022 Joint European Conference on Networks and Communications & 6G Summit (EuCNC/6G Summit)*, pages 369–374. IEEE, 2022.
- Carolina Fernández, Andrés Cárdenas, Sergio Giménez, Juncal Uriol, Mikel Serón, and Carlos Giraldo-Rodríguez. Application of multi-pronged monitoring and intent-based networking to verticals in self-organising networks. In *2022 5th International Conference on Advanced Communication Technologies and Networking (CommNet)*, pages 1–10. IEEE, 2022a.
- Carolina Fernández, Sergio Giménez, Eduard Grasa, and Shuaib Siddiqui. Rina-based virtual networking solution for distributed vnfs: Prototype and benchmarking. *EUCNC 2022*, 2022b.

Zalao Fernández, Álvaro Gabilondo, Álvaro Vázquez-Rodríguez, Carlos Giraldo-Rodríguez, J Joaquín Escudero-Garzás, Sergio Giménez, Andrés Cárdenas, and Carlos Herranz. Solutions for traffic isolation in 5g infrastructures using network slicing techniques. In *2022 32nd International Telecommunication Networks and Applications Conference (ITNAC)*, pages 64–69. IEEE, 2022c.

Sergio Giménez Antón. Prototype and benchmark of a rina-based virtual networking solution for virtual network functions (vnfs). Master's thesis, Universitat Politècnica de Catalunya, 2022.

Sergio Giménez Antón. *Development of a low-cost prototype to evaluate the performance of Transdermal Optical Links*. PhD thesis, Universitat Politècnica de Catalunya. Escola Tècnica Superior d'Enginyeria . . . , 2020.

Carolina Fernández, Sergio Giménez, Eduard Grasa, and Steve Bunch. A p4-enabled rina interior router for software-defined data centers. *Computers*, 9(3):70, 2020.

Sergio Gimenez, Eduard Grasa, and Steve Bunch. A proof of concept implementation of a rina interior router using p4-enabled software targets. In *2020 23rd Conference on Innovation in Clouds, Internet and Networks and Workshops (ICIN)*, pages 57–62. IEEE, 2020.

Steve Bunch, Sergio Giménez, Eduard Grasa, and Carolina Fernández. A p4-enabled rina interior router for software-defined data centres. *MDPI. Post-IP Networks: Advances on RINA and other Alternative Network Architectures*, 2020.

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## Projects & Extracurriculars

**Hahatay Community Network** *Volunteer Coordinator* **Sep 2020 – present**

- Technical management of the project, supervision of UPC students.
- Conducting and organizing annual visits to Senegal for maintenance and expansion of the network.
- Project website: [hahatay.network](http://hahatay.network).

**AUCOOP** *Volunteer* **Sep 2017 – present**

- AUCOOP is a students' association from the UPC that makes cooperation projects related to IT locally and in developing countries.
- Association's website: [aucoop.upc.edu](http://aucoop.upc.edu).

**GANT 5-1 Project** *Contributor* **Jan 2022 – Dec 2024**

- Contributed to automating the deployment of the GÉANT Automation Platform.
- Developing a web application for deploying virtual topologies (Containerlab as a service).
- Link: [docs.gap.geant.org](https://docs.gap.geant.org).

**Smart5Grid Project** *Contributor* **Mar 2023 – Jun 2024**

- Implemented a Python-based backend component for automated deployment of Kubernetes-based apps.
- Link: [smart5grid.eu](http://smart5grid.eu).

**6G-ENABLERS-DLT Project** *Contributor* **Sep 2023 – Dec 2024**

- Implemented a Python-based intent engine backed with large language models.
- Link: [i2cat.net/unico/6genablers](https://i2cat.net/unico/6genablers).

**Open-VERSO Project** *Contributor* **Sep 2020 – Sep 2023**

- Participated in the design of the interconnectivity for the federated testbeds.
- Implemented a RINA stack in C using netmap.
- Link: [openverso.org](http://openverso.org).

**UE Claret** *Head Basketball Coach* **Aug 2013 – Jan 2020**

- Coached basketball teams of different genders and ages.

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## Technical Skills

<b>Programming Languages</b>	Python, C, P4
<b>Tools &amp; Technologies</b>	Linux, RINA, netmap, SDN, Docker, QEMU/KVM, Kubernetes
<b>Networking</b>	Network Design, Virtualization, Automation, 5G/6G concepts, APIs
<b>Languages</b>	Spanish (Native), Catalan (Native), English (C1), French (A2)