

ALBERT GRAN ALCOZ

Contact Information	35 Gloriastrasse, 8092 Zürich Switzerland <i>Phone:</i> +34 627 545 743 +41 76 699 92 57 <i>Email:</i> galberto@ethz.ch <i>Website:</i> https://nsg.ee.ethz.ch/people/albert-gran-alcoz/
Research Interests	Computer Systems and Networking: At the crossroads of Network Security, Machine Learning and Programmability
Education	ETH Zürich PhD, Electrical Engineering and Information Technology, Graduating June 2024. Advised by Prof. Dr. Laurent Vanbever. ETH Zürich Master's Thesis, Electrical Engineering and Information Technology, 2018. Advised by Prof. Dr. Laurent Vanbever. GPA: 10/10 with Honors. Universitat Politècnica de Catalunya M.Sc. Telecommunications Engineering, 2018. GPA: 9.59/10. Georgia Institute of Technology Bachelor's Thesis, Electrical and Computer Engineering, 2016. Advised by Prof. Dr. Ian Akyildiz. GPA: 9.5/10. Universitat Politècnica de Catalunya B.Sc. Telecommunications Engineering, 2016. GPA: 8.11/10.
Industry Experience	Cloudflare November 2023 - January 2024 <i>PhD Research Intern</i> Working on the design of data-driven network defenses, and hardware-accelerated tools to automatically mitigate volumetric denial-of-service attacks from network traffic. IBM January 2017 - July 2017 <i>Software Engineering Intern</i> Designed and implemented software solutions for Internet-banking platforms and digital channels, taking advantage of the IBM cloud facilities and its cutting-edge cognitive technologies. Imagine Creativity Center October 2016 - February 2017 <i>Dreamer Internet of Things Edition 2016-17</i> Invented SafeBeat, a smart-device that enhances traffic safety in our highways by guiding drivers on their journey and protecting them in case of emergency. CERN September 2015 - January 2016 <i>Challenge Based Innovation Program</i> Collaborated with researchers at CERN to develop Well2Go, an IoT-based solution to improve access to safe water in developing countries. Project winner of the CBI 2015. Intel Corporation March 2015 - March 2015 <i>Intel Software Services Group Staff</i> Managed the Tinker Zone area of the Intel Software Services booth at MWC 2015, preparing and performing demonstrations with the latest products and technologies.

Academic Research Experience **University of California, Berkeley** July 2023 - October 2023
Visiting Scholar, Berkeley NetSys Lab
Project: Multi-cloud QoS and In-Network Congestion Management

ETH Zürich February 2018 - February 2019
Scientific Assistant, Networked Systems Group
Project: On Offloading Control Plane Applications to the Data Plane

Universitat Politècnica de Catalunya September 2017 - February 2018
Research Intern, Signal Theory and Communications
Project: Next Generation 5G OFDM-Based Modulations for Intensity Modulation-Direct Detection (IM-DD) Optical Fronthauling

Georgia Institute of Technology February 2016 - July 2016
Visiting Student Researcher, Broadband Wireless Networking Lab
Project: Towards Wireless Infrastructure-as-a-Service (WlaaS) for 5G Software-Defined Cellular Systems

Publications **Everything Matters in Programmable Packet Scheduling**
Albert Gran Alcoz, Balázs Vass, Gábor Rétvári, Laurent Vanbever
Under submission.

QVISOR: Virtualizing Packet Scheduling Policies
Albert Gran Alcoz, Laurent Vanbever
HotNets 2023. Cambridge, Massachusetts, USA (November 2023).

Reducing P4 Language's Voluminosity using Higher-Level Constructs
Albert Gran Alcoz, Coralie Busse-Grawitz, Eric Marty, Laurent Vanbever
EuroP4 2022. Rome, Italy (December 2022).

Aggregate-Based Congestion Control for Pulse-Wave DDoS Defense
Albert Gran Alcoz, Martin Strohmeier, Vincent Lenders, Laurent Vanbever
ACM SIGCOMM 2022. Amsterdam, Netherlands (August 2022).

SP-PIFO: Approximating Push-In First-Out Behaviors using Strict-Priority Queues
Albert Gran Alcoz, Alexander Dietmüller, Laurent Vanbever
USENIX NSDI 2020. Santa Clara, CA, USA (February 2020).

Experimental Assessment of 5-10Gbps 5G Multicarrier Waveforms with Intensity-Modulation Direct-Detection for PONs
Samael Sarmiento, Albert Gran Alcoz, Jose A. Altabas, Marco Scalabroni, Salvatore Spadaro, Ignacio Garces, Jose A. Lázaro
IEEE PSC 2018. Limassol, Cyprus, EU (July 2019).

Towards Wireless Infrastructure-as-a-Service for 5G Software-Defined Cellular Systems
Albert Gran Alcoz, Shih-Chun Lin, Ian F Akyildiz
IEEE ICC 2017. Paris, France (May 2017).

- Talks**
- Aggregate-Based Congestion Control for Pulse-Wave DDoS Defense**
ABB Research Center. Baden-Dättwil, Switzerland (March 2024).
 - Weak-Origin DoS Defense**
Cloudflare Research. Munich, Germany (January 2024).
 - QVISOR: Virtualizing Packet Scheduling Policies**
ACM HotNets 2023. Cambridge, Massachusetts, USA (November 2023).
 - In-Network Congestion Management for Security and Performance**
Cloudflare Research. Munich, Germany (November 2023).
 - Reducing P4 Language's Voluminosity using Higher-Level Constructs**
ACM EuroP4 2022. Rome, Italy (December 2022).
 - Programmable Packet Scheduling on Existing Hardware**
Princeton University. ECE 539B. Princeton, New Jersey (Online). (September 2022).
 - Aggregate-Based Congestion Control for Pulse-Wave DDoS Defense**
ACM SIGCOMM 2022. Amsterdam, Netherlands (August 2022).
 - DDoS-AID: Automated In-Network DDoS Mitigation as a First Line of Defense**
Armasuisse Cyber-Alp Retreat 2020. Gstaad, Switzerland (July 2020).
 - SP-PIFO: Approximating Push-In First-Out Behaviors using Strict-Priority Queues**
 - Intel Corporation, Barefoot Networks. Santa Clara, CA, USA (February 28th, 2020).
 - Stanford University, Platform Lab Seminar. Palo Alto, CA, USA (February 25th, 2020).
 - NSDI 2020. Santa Clara, CA, USA (February 25th, 2020).
 - Towards Wireless Infrastructure-as-a-Service (WlaaS) for 5G SDN-Cellular Systems**
IEEE ICC 2017. Paris, France (May 22nd, 2017).
- Teaching**
- Teaching Assistant**, Autumn 2023 - 2018
Advanced Topics in Communication Networks, ETH Zürich (Prof. Laurent Vanbever)
 - Teaching Assistant**, Spring 2021, Autumn 2019
Seminar in Communication Networks, ETH Zürich (Prof. Laurent Vanbever)
- Supervised Thesis**
- Interactive Synthesis of Network Queries from Traffic Examples**
Félicité Lordon, Master Thesis, Autumn 2021
Co-supervised with Tibor Schneider.
 - PACKS: A Practical Abstraction for Programmable Packet Scheduling**
Nicole Wenzinger, Semester Thesis, Autumn 2021
 - O4: A Higher-level Data-plane Programming Language**
Eric Marty, Master Thesis, Spring 2021
Co-supervised with Coralie Busse-Grawitz.
 - Boosting QoE in Internet Applications using Programmable Packet Scheduling**
Sharat Chandra Madanapalli, Academic Guest, Fall 2020
Co-supervised with Alexander Dietmüller.
 - Self-protecting Networks from IoT-based Attacks**
Noa Melchior, Master Thesis, Spring 2020
Co-supervised with Roland Meier.

Improving Performance with Network-aware Scheduling Algorithms

Robin Berner, Semester Thesis, Autumn 2019

Co-supervised with Alexander Dietmüller.

Traffic-analysis Attacks Over Encrypted HTTP from the Data Plane

Jan Müller, Master Thesis, Autumn 2019

Co-supervised with Roland Meier.

Volunteering Activities

United Nations International Student Conference (UNIS-UN)

Representative of Spain

Invited as one of the 300 students worldwide which took part in the 35th annual UNIS-UN conference, focusing on the evolving role of the Internet and its far-reaching implications in different areas of society. Debated on latest technological advances and discussed the role that new technologies should play in our societies.

Fòrum de les Telecomunicacions i l'Electrònica

President

Coordinated a team of 20+ volunteers to create events empowering student employment, with representation of 30+ enterprises and institutions and 200+ attendees.

Telecommunications Engineering Student Council

Student's Representative

Elected as a member of the Telecommunications Student Delegation to represent the school's students community in university affairs during my undergraduate years.

Awards and Fellowships

La Caixa International Mobility Fellowship

Barcelona, Spain, May 2018

Swiss-European Mobility Programme Scholarship

Zürich, Switzerland, February 2018

Best Thesis Award on Information Systems, Cátedra Red.es

Barcelona, Spain, June 2017

UPC-ETSETB Recognition of Outstanding Academic Achievement

Barcelona, Spain, January 2017

Government of Spain (MECD) General Fellowship

Barcelona, Spain, September 2012 - July 2016

Executive Council of Catalonia Full Scholarship

Barcelona, Spain, September 2016 - July 2018

References

Prof. Dr. Laurent Vanbever

Information Technology and Electrical Engineering, ETH Zürich

lvanbever@ethz.ch

Prof. Dr. Ian Akyildiz

Electrical and Computer Engineering, Georgia Institute of Technology

ian@ece.gatech.edu

Prof. Dr. Scott Shenker

Computer Science, UC Berkeley.

shenker@icsi.berkeley.edu