

# Aleix Seguí Ugalde

Zürich, Switzerland | Barcelona, Spain | Scholar | LinkedIn

## Education

- ETH Zurich** Zürich, Switzerland  
Master's Degree in Information Technology and Electrical Engineering  
2023 - now
- Relevant Courses: Computer Architecture, Distributed Computing, Deep Learning
- Universitat Politècnica de Catalunya** Barcelona, Spain  
Bachelor in Data Science and Engineering  
2018 - 2023
- Scholarship from the Interdisciplinary Higher Education Center (CFIS-UPC)
  - Relevant Courses: Deep Learning, Audiovisual Processing, Mathematical Optimization
- Universitat Politècnica de Catalunya** Barcelona, Spain  
Bachelor in Engineering Physics  
2018 - 2023
- Scholarship from the Interdisciplinary Higher Education Center (CFIS-UPC)
  - Relevant Courses: Differential Equations, Signal Theory, Numerical Methods

## Work Experience

- Netflix** Los Gatos, CA, United States  
Research Intern  
Sep 2022 - May 2023
- Developed image and video coding algorithms with improved compression and performance
  - Co-authored two contributions to standards for AOMedia in video codec development
- Qualcomm** Barcelona, Spain (remote)  
Engineering Intern  
Jun 2022 - Sep 2022
- Implemented Graph Neural Networks to predict the performance of 5G communication networks
- Hewlett-Packard** Barcelona, Spain  
Engineering Intern  
Jun 2019 - Sep 2019
- Developed software to assist research on improving image quality in large format printers

## Research Experience

- Institut de Ciències del Mar** Barcelona, Spain  
Engineering Research Collaboration  
2024 - now
- Designed compression algorithms for Fibre Optic Sensing data, enabling further research
- ETH Zurich** Zürich, Switzerland  
High-level Synthesis Compiler Development  
2023 - 2024
- Developed components for the open-source High-Level Synthesis compiler *Dynatomic*
- Institut de Ciències del Mar** Barcelona, Spain  
Software Engineering Collaboration  
2020 - 2023
- Implemented a Python module (with C extensions) for ARMA filtering of 3D signals
  - Software on *GitHub*, enabling multiple publications
- Institut Català d'Oncologia** Barcelona, Spain  
Machine Learning - Course Project  
Feb 2021 - May 2021

- Designed an indoor positioning model in a 6-floor hospital based on Bluetooth beacons

#### **Arcvi Big Data Agency**

Data Science Intern

Barcelona, Spain

Jun 2021 - Aug 2021

- Trained an image segmentation algorithm to identify lungs in torso radiographs

### **Academic Activities**

#### **ETH Zurich**

Research Assistant

Zurich, Switzerland

Feb 2024 - Jul 2024

- Contributed to development of a High-Level Synthesis compiler with Prof. Lana Josipovic

#### **Universitat Politècnica de Catalunya**

Undergraduate Teaching Assistant and Mentor

Barcelona, Spain

Sep 2021 - May 2022

- Led a 4h/week course on Math and Engineering for 9 first-year students

#### **Universitat Politècnica de Catalunya**

Undergraduate Teaching Assistant

Barcelona, Spain

Feb 2021 - May 2021

- Assisted with teaching and labs for Algorithmics and Programming

#### **Weizmann Institute of Science**

Summer Science Program

Rehovot, Israel

Summer 2018

- Participated in a quantum-physics-focused summer program

#### **Massachusetts Institute of Technology**

Summer Science Program

Cambridge, MA, USA

Summer 2017

- Studied astrophysics in a research science program

### **Publications**

- **A. Seguí**, A. Ugalde, J. Egozcue. "*hvarma: Autoregressive Moving Average Model of Microtremor H/V spectral ratio*", *Software Impacts*, 2025. 10.1016/j.simpa.2025.100745
- T. Rodriguez, **A. Seguí**, A. Ugalde, M. Cubas, H. Latorre, S. Ventosa, T. Monfret. "*Automatic Identification of High-quality Channels in Distributed Acoustic Sensing through Implementation of a Channel Quality Index*", *Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 2025 (in press)
- A. Ugalde, **A. Seguí**, M. Ortuzar, JM Ortuzar, C. Ranero. "*Subfluvial Tunnel Layout Design: Mapping Recent Sediment Fill in Bilbao Estuary Using H/V Spectral Ratio*", *Engineering Geology*, December 2023. 10.1016/j.enggeo.2023.107338
- **A. Seguí**, J.J. Curto, V.de Paula, et al. "*Temporal Variation and Asymmetry of Sunspot and Solar Plage Types from 1930 to 1936*", *Advances in Space Research*. Volume 63, Issue 11, 1 June 2019, Pages 3738-3748. 10.1016/j.asr.2019.02.018
- O. Gasulla, M. J. Ledesma, L. Borrell, ..., **A. Seguí**, et al. "*Enhancing Physicians' Radiology Diagnostics of COVID 19's Effects on Lung Health by Leveraging AI*", *Frontiers in Bioengineering and Biotechnology*, April 2023. 10.3389/fbioe.2023.1010679

### **Conference Presentations**

- M. Balsells, **A. Seguí**, A. Zolkowski. "*Scaling Multi-Agent Reinforcement Learning through Mean Field Games and Incremental Learning*". 35th AAAI Conference on Artificial Intelligence. Poster Presentation. [Link](#)
- **A. Seguí**, A. Ugalde, S.Ventosa. "*Inter-channel Lossless Data Compression for Distributed Acoustic Sensing*". *Fibre Optic Sensing in Geosciences*, May 2024, Catania (Italy). Oral presentation. 10.5194/egusphere-gc12-fibreoptic-5
- **A. Seguí**, A. Ugalde, S.Ventosa, JR Morros. "*Lossless and Lossy Compression for Distributed Acoustic*

*Sensing Using Inter-channel Predictions". Photonic Seismology: Lighting the Way Forward*, October 2024, Vancouver (Canada). Poster presentation.

## Patents

- Sole inventor: WO/2024/197088 *"Techniques for Performing Directional Intra Prediction When Encoding Media Content"*, assigned to Netflix
- Co-author of US 2024/0372787 *"Systems and Methods for Using Bottleneck Structures to Improve Performance of ML-Based Modeling"*, assigned to Qualcomm

## Other Achievements

- Admitted to the DPhil in Engineering Science (PhD) program at the University of Oxford
- Co-authored two technical contributions to the AV2 codec standard during internship at Netflix
- Winner of the 2021 *Datathon* (UPC) on housing prices in Barcelona

## Languages

- **Catalan:** Native
- **Spanish:** Native
- **English:** C1 – Duolingo English Test
- **French:** B2
- **German:** A2