Dr. Italo Atzeni – Curriculum Vitae

Personal details

- **Website:** `http://www.cc.oulu.fi/~iatzeni18/`
- **Google Scholar:** `https://scholar.google.com/citations?user=d-6EdeoAAAAJ`
- **ORCID:** `https://orcid.org/0000-0003-4363-396X`

Degrees

01/10/2020 **Title of Docent (Adjunct Professor): Multi-Antenna and Distributed Communications**
University of Oulu (Finland)

08/07/2014 **PhD degree in Signal Theory and Communications** (Hons.)
Polytechnic University of Catalonia–BarcelonaTech (Spain)

02/03/2010 **Master's degree in Telecommunications Engineering** (Hons.)
University of Cagliari (Italy)

19/10/2007 **Bachelor's degree in Electronic Engineering**
University of Cagliari (Italy)

Current employment

01/2022–present **Tenure-Track Assistant Professor** (since 09/2022: **Academy Research Fellow**)
University of Oulu, Centre for Wireless Communications (Finland)
My research spans a wide range of topics from communication theory, signal processing, and optimization theory. Specifically, it focuses on physical-layer aspects of multi-antenna systems, developing analytical and algorithmic tools at both the network- and device-level to enable scalable and sustainable 6G-and-beyond wireless communications. Currently, my work centers on the following topics: *i)* low-resolution and 1-bit massive MIMO with application to (sub-)THz communications; *ii)* holographic MIMO and near-field communications; and *iii)* distributed optimization of cell-free massive MIMO. My team currently consists of six Doctoral Researchers, three Postdoctoral Researchers, and two Senior Researchers working on these subjects. I am Academy Research Fellow (Research Council of Finland) and PI of the linked project HIGH-6G (2022–2027). I am also PI of the project EETCAMD funded by the Research Council of Finland and the National Science Fundation (2023–2025). I am principal lecturer for the Master's and doctoral courses "Convex Optimization", "Information Theory", and "Ultra-Reliable Low-Latency Communications". I serve as Editor for IEEE Transactions on Wireless Communications and as Senior Editor for IEEE Communications Letters.

Previous work experience

01/2019–12/2021 **Senior Researcher** (since 10/2020: **Adjunct Professor**)
University of Oulu, Centre for Wireless Communications (Finland)

07/2017–12/2018 **Postdoctoral Researcher**
EURECOM, Communication Systems Department (France)

11/2014–07/2017 **Researcher**
Huawei Technologies, Mathematical and Algorithmic Sciences Lab, Paris Research Center (France)

08/2013–01/2014 **Visiting Doctoral Researcher**
Hong Kong University of Science and Technology, Electronic and Computer Engineering Department (Hong Kong)

09/2010–07/2014 **Doctoral Researcher**
Polytechnic University of Catalonia–BarcelonaTech, Signal Theory and Communications Department (Spain)

Research funding and grants

2023–2025 Research project: **Research Council of Finland–NSF joint call: Artificial intelligence and/or wireless communication technologies**, project **Energy Efficient THz Communications Across Massive Dimensions (EETCAMD)**. Amount: 713 941 €. Source: *Research Council of Finland*. The project is carried out in collaboration with the University of California, Irvine and the San Diego State University.

2022–2027 Personal grant: **Academy Research Fellowship**, project **High-Frequency Revolution for Sustainable 6G Systems (HIGH-6G)**. Amount: 1 019 078 €. Source: *Research Council of Finland*. The success rate of the call was 10%.

2020–2022 Personal grant: **MSCA-IF**, project **Device-Centric Low-Complexity High-Frequency Networks (DELIGHT)**. Amount: 190 681 €. Source: *European Commission (Horizon 2020)*. The proposal was approved with a score of 97.2% (98th percentile).

2014 Personal grant: **Endeavour Research Fellowship**. Source: *Australian Government (Department of Education and Training)*. The funding was declined to join Huawei Technologies.

2014 Research project: **Distributed Techniques for the Management and Operation of Wireless Cellular Networks, Sensor Networks and the Smart Energy Grid (DISNET)**. Amount: 245 600 €. *Source: Spanish Government (MINECO)*. PI: Prof. Alba Pagès-Zamora. The proposal was largely based on the work of my doctoral thesis.

2010-2014 Personal grant: **FI-DGR Doctoral Research Grant**. Source: *Catalan Government (AGAUR)*.

Research output

- I have (co-)authored over 70 papers in top-tier peer-reviewed international journals and conferences, and I am the co-inventor of 13 filed patents. The detailed list of publications can be found here: `https://cc.oulu.fi/~iatzeni18/publications/`.

Research supervision and leadership

Current Doctoral Researchers:

08/2023–present **Mr. Nima Mozaffari Khosravi**
Research topic: low-complexity beam focusing design for near-field massive MIMO. Expected graduation date: 08/2027.

06/2023–present **Mr. Amila Ravinath**
Research topic: performance analysis of massive MIMO with 1-bit ADCs. Principal supervisor: Prof. A. Tölli. Expected graduation date: 06/2027.

05/2022–present **Mr. Danial Bahrami Kahyashnejad**
Research topic: machine learning methods for cell-free massive MIMO. Co-supervisor: Prof. A. Tölli. Expected graduation date: 05/2027.

03/2023–present **Ms. Maral Safari Naij**
Research topic: near-field channel estimation using compressive sensing. Expected graduation date: 03/2027.

03/2023–present **Mr. Ashutosh Prajapati**
Research topic: EM-based channel modeling for holographic MIMO. Expected graduation date: 03/2027.

03/2022–present **Mr. Amin Radbord**
Research topic: data detection for massive MIMO with 1-bit ADCs. Co-supervisor: Prof. A. Tölli. Expected graduation date: 03/2026.

Graduated Doctoral Researchers:

05/2019–12/2024 **Dr. Bikshapathi Gouda**
Thesis title: "Resource optimization in distributed massive MIMO under signaling and hardware limitations". Principal supervisor: Prof. A. Tölli. Graduation date: 16/12/2024.

02/2018–05/2021 **Dr. Placido Mursia**, *EURECOM* (France)
Thesis title: "Multi-antenna methods for scalable beyond-5G access networks". Principal supervisor: Prof. D. Gesbert. Graduation date: 21/05/2021.

Postdoctoral and Senior Researchers:

03/2023–present **Dr. Gustavo Rodrigues de Lima Tejerina** (Postdoctoral Researcher)

08/2023–present **Dr. Minhua Ding** (Senior Researcher)

01/2024–present **Dr. Arttu Arjas** (Postdoctoral Researcher)

09/2024–present **Dr. Vidya Bhasker Shukla** (Postdoctoral Researcher)

10/2024–present **Dr. Prathapasinghe Dharmawansa Kaluwa Devage** (Senior Researcher)

Graduated Master's Students:

06/2022–06/2023 **Mr. Amila Ravinath**
Thesis title: "Uplink power control for massive MIMO systems with 1-bit ADCs". Co-supervisor: Prof. A. Tölli.

03/2017–08/2017 **Ms. Imène Ghamnia**, *CentraleSupélec* (France)
Thesis title: "Analysis and modelling of cache-enabled full-duplex networks". Principal supervisor: Prof. M. Debbah.

Teaching merits

- Since 2019, I am principal lecturer for the Master's and doctoral courses "Convex Optimization", "Information Theory", and "Ultra-Reliable Low-Latency Communications" at the University of Oulu, for which I am responsible for the full course design, preparation of the learning material, theoretical and practical lectures, and office hours. In 2017–2018, I was adjunct lecturer for the Master's course "Information Theory" at EURECOM. In 2018, I was invited lecturer at the summer school organized by the MSCA-ITN project SPOTLIGHT at EURECOM. In 2012–2013, I was adjunct lecturer for the Bachelor's course "Introduction to Communications" at the Polytechnic University of Catalonia–BarcelonaTech.
- I completed the following pedagogical training at the University of Oulu: "Basics of University Pedagogy" (10 ECTS credits), "Teaching Practice in University Pedagogy" (10 ECTS credits), "Research-Based Teacherhood" (5 ECTS credits), and "Doctoral Supervision Training for Supervisors" (1 ECTS).

Awards and honors

- **Exemplary Editor Award** for the IEEE Communications Letters in 2022, 2023, and 2024.
- **Best Student Paper Award** at *IEEE SPAWC 2023* for the paper "Analysis of oversampling in uplink massive MIMO-OFDM with low-resolution ADCs".
- **Best Paper Award** at *IEEE ICC 2019 (Wireless Communications Symposium)* for the paper "D2D-aided multi-antenna multicasting" (selected among 170 accepted papers).

Other academic merits

- **Editorial work:**

  02/25-present Guest Editor for *EURASIP for Journal on Advances in Signal Processing*: Signal processing for XL-MIMO and holographic MIMO.

  01/2025–present Senior Editor for *IEEE Wireless Communications Letters*, area "Signal Processing I".

  09/2024–present Editor for *IEEE Transactions on Wireless Communications*, area "Multiple Antenna Communications".

  09/2021–12/24 Editor for *IEEE Wireless Communications Letters*, area "Signal Processing I".

- **Conference organization:**
  - Symposium co-chair for *IEEE GLOBECOM 2025*, "Wireless Communications Symposium".
  - TPC chair for *SNOW Workshop 2024*.
  - TPC track co-chair for *EuCNC & 6G Summit 2023*, "Radio Access and Softwarisation".
  - Publication chair for *IEEE SPAWC 2022*.
  - Local arrangement chair for *IEEE SPAWC 2019*.
- **Special sessions at conferences:**
  - "Signal processing for XL-MIMO and holographic MIMO," *EUSIPCO 2025*.
  - "Signal processing for XL-MIMO and holographic MIMO," *IEEE Asilomar 2025*.
  - "Low-Complexity mmWave and THz Massive MIMO Systems for Beyond 5G," *IEEE SPAWC 2021*.
  - "Distributed and Cooperative Methods for Beyond-5G Wireless Systems," *IEEE SPAWC 2019*.
- **Tutorials at conferences:**
  - "Interference Management and Medium Access Techniques for Dependable Communications in the 6G Era", *IEEE DySpan 2024*.
  - "Tools and Techniques for URLLC Towards Beyond-5G Systems," *IEEE ICC 2021*.
  - "Tools and Techniques for URLLC Towards Beyond-5G Systems," *IEEE VTC 2021-Spring*.
- **Technical program committees:** TPC member for 100+ symposia and workshops at major IEEE conferences, including *IEEE ICC*, *IEEE GLOBECOM*, *IEEE SPAWC*, *IEEE ICASSP*, and *IEEE WCNC*.
- **Chairing:** Several sessions chaired at major IEEE conferences, including *IEEE ICC*, *IEEE GLOBECOM*, and *IEEE SPAWC*.
- **Reviews:** Reviewer for all major IEEE journals on communication theory and signal processing, including *IEEE Trans. Wireless Commun.*, *IEEE Trans. Signal Process.*, *IEEE Trans. Inf. Theory*, *IEEE Trans. Commun.*, *IEEE J. Sel. Areas Commun.*, *IEEE J. Sel. Topics Signal Process.*, *IEEE Wireless Commun. Mag.*, *IEEE Commun. Lett.*, and *IEEE Wireless Commun. Lett.*
- **Professional memberships:**
  - Senior Member of the IEEE, *IEEE ComSoc*, and *IEEE Signal Processing Society*.
  - Active Member of the *IEEE Communication Theory*, *IEEE Wireless Communications*, and *IEEE Signal Processing and Computing for Communications* technical committees.
- **Other professional qualifications:** I obtained the French qualification for Assistant Professor (qualification aux fonctions de maître de conférences) in the *Computer Engineering, Automatics, and Signal Processing* section in 2017.
- **External evaluations:** I ranked 1st from more than 30 applicants for the position of Tenure Track Assistant Professor at Telecom SudParis (France) in 05/2018.