

Curriculum vitae di Anna Guerra

Sottosettori ERC primari (max 3): PE7

PERSONAL DETAILS

Family name, First name: Guerra, Anna

ORCID: <https://orcid.org/0000-0001-5214-1444> - Scopus Author ID: 55497944800

Date of birth: May 11, 1987

Nationality: Italian

URL for web site: <https://www.unibo.it/sitoweb/anna.guerra3>

• Education and key qualifications

- 2013-2016 **European Doctor of Philosophy (Ph.D.) Degree**, *Electrical, Electronic, and Information Engineering, DEI, University of Bologna (UNIBO)*. Supervisor: Prof. Davide Dardari.
- 2014-2015 **Research Visiting Period at Commissariat à l'Énergie Atomique et aux Énergies Alternatives (CEA-Leti)**, France. Supervisor: Dr Raffaele D'Errico.
- 2011, 2009 **M.Sc. and B.Sc. Degrees in Electronics and Telecommunications Engineering**, *Faculty of Engineering, Cesena, Italy*.

• Current position(s)

2024 to date Associate Professor at the **University of Bologna**, *Electrical, Electronic, and Information Engineering, DEI, University of Bologna (UNIBO)*.

• Previous position(s)

- 2021-2024 Researcher at the **National Research Council of Italy (CNR)**. *Institute of Electronics, Information Engineering and Telecommunications (IEIIT), Italy*.
- 2020-2021 **Postdoctoral Research Fellow** at DEI, University of Bologna, Italy.
- 2018-2020 **Marie Curie Global Research Fellow** at UNIBO (Italy), **Stony Brook University (SBU, New York, USA)**. Project Call: H2020-MSCA-IF-2017, Global Fellowship. Supervisors: Prof. D. Dardari, Prof. Petar M. Djurić.
- 2016-2018 **Postdoctoral Research Fellow** at DEI, UNIBO, Italy.
- 2012 **Research Collaborator** at CEA-LETI, France.

RESEARCH ACHIEVEMENTS AND PEER RECOGNITION

Research achievements.

Bibliometric Indexes – 1508 (Citations - Scopus), 19 (H-Index, Scopus), 68 (Documents)

[1] A. Elzanaty, **A. Guerra**, F. Guidi and M. S. Alouini, "Reconfigurable Intelligent Surfaces for Localization: Position and Orientation Error Bounds," in *IEEE Trans. Signal Process.*, vol. 69, pp. 5386-5402, 2021.

This paper is the first scientific contribution that derives localization performance limits for a multi-antenna system with reconfigurable intelligent surfaces.

[2] **A. Guerra**, F. Guidi, D. Dardari and P. M. Djurić, "Near-Field Tracking With Large Antenna Arrays: Fundamental Limits and Practical Algorithms," in *IEEE Trans. Signal Process.*, vol. 69, pp. 5723-5738, 2021.

This paper studies a near-field tracking problem for inferring the state of a moving source with an ad-hoc observation model based on the phase-difference profile of a large receiving array. Although recent, this paper is already a key reference for researchers studying near-field localization and tracking problems.

[3] **A. Guerra**, F. Guidi and D. Dardari, "Single-Anchor Localization and Orientation Performance Limits Using Massive Arrays: MIMO vs. Beamforming," in *IEEE Trans. Wireless Commun.*, vol. 17, no. 8, pp. 5241-5255, 2018.

This paper was the very first paper in deriving the near-field localization performance limits for a single-user multi-antenna system working at millimetre-waves for a 5G cellular scenario.

[4] **A. Guerra**, F. Guidi, D. Dardari, A. Clemente and R. D’Errico, "A Millimeter-Wave Indoor Backscattering Channel Model for Environment Mapping," in *IEEE Trans. Antennas Propag.* vol. 65, no. 9, pp. 4935-4940, 2017.

This paper proposes a channel model for personal radar applications where a mmW massive array is used for scanning the environment and reconstructing a map of it.

[5] **A. Guerra**, D. Dardari and P. M. Djuric, "Dynamic Radar Networks of UAVs: A Tutorial Overview and Tracking Performance Comparison with Terrestrial Radar Networks," in *IEEE Veh. Technol. Mag.*, vol. 15, no. 2, pp. 113-120, 2020.

This paper is a tutorial about dynamic radar networks of unmanned aerial vehicles (UAVs) and it was conceived in the context of the Marie Curie “Airsens” project.

[6] F. Guidi, **A. Guerra**, and D. Dardari. "Personal mobile radars with millimeter-wave massive arrays for indoor mapping." In *IEEE Trans. Mobile Comput.* 15.6 (2015): 1471-1484.

This paper put forth the concept of a personal mobile radar operating at millimeter-waves and consisting of a massive array for accurate environmental mapping.

[7] **A. Guerra**, D. Dardari, and P. M. Djurić. "Dynamic radar network of UAVs: A joint navigation and tracking approach." In *IEEE Access* 8 (2020): 116454-116469.

This paper considers a dynamic radar network of unmanned aerial vehicles (UAVs) for real-time and high accuracy tracking of malicious targets and it was conceived in the context of the Marie Curie “Airsens” project.

[8] N. Decarli, **A. Guerra**, C. Giovannetti, F. Guidi, B.M. Masini. "V2X sidelink localization of connected automated vehicles." In *IEEE J. Sel. Areas in Commun.* (2023).

This paper derives localization performance limits in vehicular contexts by accounting for the presence of large arrays on board vehicles able to exchange vehicle-to-everything (V2X) sidelink packets.

[9] M. Lotti, G. Pasolini, A. Guerra, F. Guidi, R. D’Errico, D. Dardari. "Radio SLAM for 6G systems at THz frequencies: Design and experimental validation." in *IEEE J. Sel. Topics Signal Process.* (2023).

This paper develops Simultaneous Localization and Mapping (SLAM) techniques using THz multi-antenna radars. The performance is validated through simulations and using real-world THz radar measurements.

[10] F. Guidi, **A. Guerra**, A. Zanella "Performance Analysis of Randomly Distributed Reconfigurable Intelligent Surfaces with Different Phase Profiles." In *IEEE Trans. Wireless Commun.* (2023).

This paper proposes a statistical characterization of the communication coverage and outage probability in the presence of reconfigurable intelligent surfaces characterized by a realistic phase profile.

Peer recognition

• FELLOWSHIPS

2023 **ERC Starting Grant (ERC-STG-2023)**, funded by the European Commission under grant 101116257 (“CUE-GO” project). Grant: 1 055 314.00€.

2022 **ERC’s Visiting Fellowship (VFP)**, funded by CNR.
Support for a visiting period of one month at the **Engineering and Technology Institute Groningen, the Netherlands, hosted by Prof. Ming Cao** (PI of the project CORNEA, ERC Consolidator Grant, PE7, ERC-2017-COG).

2018 **Individual Global Marie Curie Fellowship (MSCA-IF-GF, H2020)** funded by the European Commission under grant 793581 (“AirSens” project). Grant: 164204€.
Host institutions: University of Bologna (Beneficiary) and Stony Brook University.

2015 **Student Travel Grant** to attend the IEEE European Conf. Netw. Commun., Paris, France.

• AWARDS

2021 **Best Paper Award (1st place)**. **Guerra**, et al. “Real-time learning for THz radar mapping and UAV control.” *IEEE Int. Conf. Autonomous Syst. (ICAS)*, Montréal, Québec, Canada.

2021 **Best Paper Award**. Dardari, et al. “An ultra-wideband battery-less positioning system for

space applications.” *IEEE Int. Conf. RFID Tech. Appl. (RFID-TA), Pisa, Italy.*

2021 **Best Student Paper Award (1st place).** *Guerra, et al. “Energy sprinklers for passive UWB RFID.” IEEE Int. Conf. Ultra-WideBand. (ICUWB), Paris, France.*

• ORGANISATION OF SCIENTIFIC MEETINGS

- May 2026 **Organizer of the workshop** “Multi-Modal Signal Processing and AI for Communications and Sensing in 6G and Beyond (MuSiC-6GB)” at *2026 IEEE International Conference on Acoustics, Speech, and Signal Processing (IEEE ICASSP 2026)*, Barcelona, Spain.
- Sept. 2025 **Organizer of the workshop** “Learning for Sensing and Communications in Multi-Agent Networks” at *33rd European Signal Processing Conference (EUSIPCO 2025)*, Palermo, Italy.
- April 2025 **Organizer of the workshop** “Distributed Signal Processing and Machine Learning for Autonomous Systems” at *2025 IEEE International Conference on Acoustics, Speech, and Signal Processing (IEEE ICASSP 2025)*, Hyderabad, India.
- June 2024 **Organizer of the workshop** “2nd Workshop on Near-Field Communications, Localization, and Sensing” at *IEEE International Conference of Communications (IEEE ICC)*, Denver, CO, USA.
- June 2024 **Signal Processing for Communications Symposium Chair** at *IEEE International Conference of Communications (IEEE ICC)*, Denver, CO, USA.
- April 2024 **Organizer of the special sessions** “Signal and Graph Processing for Autonomous Agents” Part 1 and 2 at the *IEEE International Conference on Acoustic, Speech, and Signal Processing (ICASSP 2024)*.
- June 2023 **Organizer of the workshop** “Near-Field Localization and Communication for 6G” at *IEEE International Conference of Communications (IEEE ICC)*, Rome, Italy. Number of participants: 10 (paper presenters), 2 keynote speaker, 30 attendees.
- Sept. 2022 **Organizer of the workshop** “Localization and Sensing with Intelligent Surfaces for 6G Networks” at *IEEE Vehicular Technology Conference (IEEE VTC-Fall)*, London/Beijing, UK/China. Number of participants: 5 (paper presenters), 1 keynote speaker, 20 attendees.
- June 2022 **Organizer of the workshop** “Localization and Sensing with Intelligent Surfaces for 6G Networks”. at *IEEE Vehicular Technology Conference (IEEE VTC-Spring)*, Helsinki, Finland. Number of participants: 5 (paper presenters), 2 keynote speaker, 40 attendees.
- June 2023 **Organizer of the special session** “Signal Processing and Machine Learning for Networked Autonomous Agents” at the *IEEE International Conference on Acoustic, Speech, and Signal Processing (ICASSP 2023)*.
- Nov. 2025 **Organizer of the special session** “Signal Processing in Communications, Navigation, and Sensing for Autonomous Systems” at the *2025 IEEE Workshop on Signal Processing Systems, Polytechnic University, Kowloon, Hong Kong.*
- Nov. 2024 **Organizer of the special session** “Signal Processing in Communications, Navigation, and Sensing for Autonomous Systems” at the *2024 IEEE Workshop on Signal Processing Systems, MIT, Boston, USA.*
- Sept. 2022 **Organizer of the special session** “Signal Processing and Machine Learning for Autonomous Dynamic Systems” at the *European Conference on Signal Processing (EUSIPCO 2022)*.
- June 2021 **Organizer of the special session** “RIS-empowered Communications and Localization for Smart Radio Environments” at the *Joint European Conference on Networks and Communications and 6G Summit (EUCNC/6GSummit 2021)*.

• INVITED TALKS AND PRESENTATION

Invited speaker at the following national and international events:

2025: Invited Speaker for an IEEE ISAC-TWC SPS Webinar.

2024: Invited Speaker for the IEEE SPAWC Talks “Near-field radio localization and mapping with intelligent surfaces”, Lucca, Italy.

2023: Invited Speaker for the IEEE SPS Webinar on the IEEE TSP paper “A. Elzanaty, A. Guerra, F. Guidi and M. S. Alouini, "Reconfigurable Intelligent Surfaces for Localization: Position and Orientation Error Bounds," in *IEEE Trans. Signal Process.*, vol. 69, pp. 5386-5402, 2021.”

2023: Talk at the **Sapienza University**, Rome, Italy, at the **Wirs Young Scientist** event- "**Empowering waves: the radiant role of the women in radio science**" organized by URSI/WIRS.

2019: Talk at the **University College of London (UCL)**, London, UK, invited by **Prof. Christos Masouros**, world-renowned expert on integrated communications and sensing.

2019: Talk at the event “**Artificial intelligence a way forward for Europe**” at the **European Research Council Executive Agency (REA)**, Bruxelles, Belgium.

I presented my research works at **18 international conferences**. I divulged my research at two **European Researchers’ Nights**: (2021) Panel presentation entitled “AI Drones for Humanity” at Liceo Malpighi La.B., Italia; (2020) On-line presentation entitled “Let’s take off! How to use drones for peaceful purposes”, Italia.

Panelist at the following national and international events:

2019: Invited panel presentation at the event “**MSCA Artificial Intelligence Cluster, Artificial Intelligence in DIGITAL world**” at the **European Research Council Executive Agency**, Belgium.

Invited Guest at the following events:

2019: **Research and Innovation at the Heart of Future European Union Policy** held by Jean-Eric Paquet (General Director at the EC) at the Flanders House, New York Times building, USA.

2019: Launch of the new institute of Artificial Intelligence “**Artificial Intelligence - Driven Discovery and Innovation**” of SBU at the Bloomberg L.P., New York City, USA.

ADDITIONAL INFORMATION

• COLLABORATIONS IN PROJECT

I collaborated in the development of localization algorithms for the following European projects: FP7-ICT Select, PRIN Greta, H2020 Xcycle, ESA LOST, H2020-ATTRACT PRIMELOC, PNRR RESTART (SRE Project), PNRR SoBigData.it. I worked for an industrial project for the automatic marine robotic launch and recovery system, funded by L3Harris - Calzoni Srl (Bologna, Italy).

• MAJOR COLLABORATIONS

I am currently collaborating on research papers with the following groups: P. Djurić (*Stony Brook University, USA*), Y. Eldar (*Weizmann Institute of Science, Israel*), M. Alouini (*KAUST, Saudi Arabia*), R. D’Errico (*CEA-Leti, France*), A. Abrardo (*University of Siena, Italy*), S. Zhang (*German Aerospace Center, Germany*), A. Elzanaty (*Surrey University, UK*), G. Fontanesi (*Université du Luxembourg*), H. Zhang (*University of Posts and Telecommunications of Nanjing, China*).

• TEACHING ACTIVITIES AND SUPERVISION OF STUDENTS

2023-2024 **Adjunct Professor** – First cycle degree programme (L) in “Telecommunications Laboratory”, Mechatronics Engineering, UNIBO, Lugo, Italy.

2022-2023 **Adjunct Professor** – First cycle degree programme (L) in “Probability Calculus and Statistics”, Mathematics and Computer Science, UNIFE, Ferrara, Italy.

2016-2022 **Teaching Assistant**
“Communication Systems: Theory and Measurements”, UNIBO, Bologna, Italy.
“Numerical Algorithms”, UNIBO, Cesena, Italy.
“Mathematical Analysis B”, UNIBO, Forlì, Italy.
“Mathematical and Numerical Analysis”, UNIBO, Forlì, Italy.

Other contributions to the research community

• REVIEWING ACTIVITIES

2023-to date **Associate Editor** – *IEEE Transactions on Wireless Communications*. Q1 Scimago.

2022-to date **Associate Editor** – *IEEE Wireless Communications Letter*. Q1 Scimago.

2021-to date **Associate Editor** – *IEEE Communications Letter* (Area: Signal Processing II). Q1 Scimago.

2021-2023 **Expert Evaluator** for the *Central Finance and Contracting Agency (CFCA) of the Republic of Latvia* and for the *Czech Science Foundation*.

2021 **Expert Evaluator** for the *Research Executive Agency of the European Commission*.
Project call: HE-MSCA-PF-2021 – contract no CT-EX2013D136119-101.

2021 **Expert Evaluator** for the *Science Foundation Ireland Research Centres and European Commission*. *Project call: 4th call in the MSCA-EDGE COFUND*

2013-to date **Reviewer** for the major international conference (e.g., IEEE Globecom, ICC) and journals (e.g., IEEE Proceedings, IEEE Trans. Signal Process., IEEE Trans. Wireless Comm.)

• MEMBERSHIPS OF SCIENTIFIC SOCIETIES

2024-to date Associated with ITATEC – Accademia di Ingegneria e Tecnologia
2021-to date Co-Chair of the Radio Communication Committee (RCC) special interest group for
“Wireless Localization” thanks to my contribution on radio localization.
2020-to date Member of the national laboratory Wilab (CNIT-Bologna), Italy
2018-to date Marie Curie Alumni Association (MCAA) Member
2016-to date IEEE Member
2013-to date IEEE Communications Society, IEEE Signal Processing Society, RCC, Inter-University
Consortium for Telecommunications of Italy (CNIT)