Ivan Iudice

Curriculum Vitae

Personal information

First name	Ivan
Last name	Iudice
Place and date of birth	Livorno, Italy, November 23, 1986
Nationality	Italian

Languages

Italian	Mother tongue
English	Fluent

Education

2014–2017 **Ph.D. degree in Information Technology and Electrical Engineering**
Universitá di Napoli Federico II, Naples, Italy.
Thesis: Equalization of CPM signals over doubly-selective aeronautical channels.
Supervisor: Prof. Giacinto Gelli.

2008–2010 **Master's degree in Telecommunications Engineering**
Universitá di Napoli Federico II, Naples, Italy.
Thesis: Un nuovo approccio alla stima della direzione d'arrivo.
Supervisors: Prof. Amedeo Capozzoli, Dr. Claudio Curcio, Dr. Giovanni Iadarola, Prof. Angelo Liseno.

2005–2008 **Bachelor's degree in Telecommunications Engineering**
Universitá di Napoli Federico II, Naples, Italy.
Thesis: La trasformata di Radon near-field per la tomografia delle aree vegetate.
Supervisors: Prof. Amedeo Capozzoli, Dr. Claudio Curcio, Prof. Angelo Liseno.

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Experience

since 2012 **Research Engineer**

CIRA – Italian Aerospace Research Centre, Capua (Caserta), Italy.

Research and developments of algorithms and technologies for prototyping modern communication systems to be used in the aerospace environment.
Detailed achievements:

- within the LORACO European CapTech information project, funded by the European Defence Agency, waveform techniques and channel simulators have been developed for implementing wideband long range communications systems operating in HF radio band;
- within the AURORA European project, funded by the European Space Agency, the working package focusing on the development of a high level GNSS threat simulator for UAM was coordinated;
- within the ORCHESTRA European project, funded by the HORIZON 2020 European research program, a real-time simulation framework for powerline communications in more-electric aircraft and spacecraft was developed;
- within the Space Rider European project, funded by the European Space Agency, electromagnetic computer simulations were carried out to tackle the antenna placement problem, moreover support was provided for designing both the data link and FTS communication systems;
- within the TECVOL–II internal project, communication algorithms have been developed for the implementation of the baseband functional blocks composing a re-configurable data-link, according to the software-defined radio paradigm;
- within the TELEMACO national project, funded by the Italian Ministry of Education, University and Research (MIUR), methods for electronic beam steering of two-dimensional arrays with non-uniformly shaped elements were developed;
- within the RAID European project, co-funded by SESAR Joint Undertaking, electromagnetic computer simulations were carried out to tackle the antenna placement problem on the CIRA flying laboratory FLARE, moreover support was provided during all of the flight tests;
- within the USV3 internal project, feasibility studies on the mission were carried out, electromagnetic problems due to the plasma phase during space vehicle re-entry were considered, and methods for the on-board assessment of the antenna patterns were analyzed.

2019–2020 **System Engineer**

PNRA – National Program of Antarctic Researches.

Within the project 2015/AZ1.02, funded by PNRA, design, integration and installation of remote stations for monitoring of nanoclimatic parameters in Antarctic cryptoendolithic communities have been provided; the remote stations have been installed throughout the Victoria Valley during the XXXV italian antarctic summer campaign resorting Mario Zucchelli station logistics.

2011–2012 **System Engineer**

CIRA – Italian Aerospace Research Centre, Capua (Caserta), Italy.

Within the TECVOL–II project, analysis of the main critical issues relating to beyond line-of-sight (BLOS) communications of unmanned aerial vehicles (UAVs) were carried out and Systems and methods involving the software defined-radio paradigm were identified.

2011 **System Engineer at Selex Galileo**
Info Solution S.p.A., Vimodrone (Milano), Italy.
Design and test of range estimation algorithms for infra-red search and track (IRST) on-board systems.

Courses taught

2020–2023 **Wireless Technologies for E-health**
Universitá di Napoli Federico II, Naples, Italy.
Master's degree in Biomedical Engineering

Awards

2023 **Best Paper in IEEE COMNETSAT 2023, Track Satellite**
12th IEEE International Conference on Communications, Networks, and Satellite 2023, November 23–25, 2023, Malang, Indonesia.
Paper title: Exploiting Doppler Diversity for Inter-satellite Multiple Access in Massive LEO Constellations.

2020 **Best Idea in Response to COVID-19 Outbreak in Italy**
IEEE CommSoc/VTS Italian Chapter.
Project: Safe and reliable public transportation systems (SALUTARY).

Research interests

- Physical layer security for communications.
- Signal and array processing for mobile communications.
- Reconfigurable Intelligent Surfaces.

Services to scientific societies

since 2022 **Membership in technical panels**.
- IEEE AESS: Glue Technologies for Space Systems

since 2017 **Reviewer for several international journals**.
- IEEE: Transactions on Communications, Transactions on Vehicular Technology, Access, Signal Processing Letters, Communications Letters.
- Hindawi: Wireless Communications and Mobile Computing.
- MDPI: Mathematics, Applied Sciences, Signals, Energies, Sensors, Electronics.

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since 2018 **TPC member for several special tracks/sessions in international conferences**.

- **Innovative Security Concepts and Applications in Aerospace Systems**, IEEE Technologies for Defense and Security (TechDefense 2024), Naples, Italy, November 11–13, 2024.
- **Criteria and Technologies for the Development of a "New Space" Ecosystem (CASTAWAYS)**, IEEE Metrology for AeroSpace (MetroAeroSpace 2024), Lublin, Poland, June 3–5, 2024.
- **Cybersecurity on the fly**, IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC 2018), Bologna, Italy, September 9–12, 2018.
- **Overcoming interference in next-generation wireless networks**, 26th European Signal Processing Conference (EUSIPCO 2018), Rome, Italy, September 3–7, 2018.

Major scientific collaborations

since 2014 **Signal PRocessing and INnovative Transmissions research group**
Universitá di Napoli Federico II, Naples, Italy, Dipartimento di Ingegneria Elettrica e Tecnologie dell'Informazione.
`http://sprint.dieti.unina.it`

- **Prof. Giacinto Gelli**
- **Prof. Francesco Verde**
- **Prof. Donatella Darsena**

since 2023 **Fields & Waves Lab**
Universitá del Sannio, Benevento, Italy, Dipartimento di Ingegneria.
`https://fw-lab.org`

- **Prof. Vincenzo Galdi**
- **Prof. Giuseppe Castaldi**

Publications

Refereed journal papers

[J1] D. Darsena, F. Verde, I. Iudice, and V. Galdi, "Design of stacked intelligent metasurfaces with reconfigurable amplitude and phase for multiuser downlink beamforming," *IEEE Open Journal of the Communications Society*, vol. 6, pp. 531–550, 2025.

[J2] D. Darsena, I. Iudice, and F. Verde, "Channel state acquisition in uplink NOMA for cellular-connected UAV: Exploitation of doppler and modulation diversities," *IEEE Open Journal of the Communications Society*, vol. 5, pp. 5408–5426, 2024.

[J3] D. Darsena, G. Gelli, I. Iudice, and F. Verde, "A hybrid NOMA-OMA scheme for inter-plane intersatellite communications in massive LEO constellations," *IEEE Transactions on Vehicular Technology*, vol. 73, no. 12, pp. 18 649–18 665, 2024.

[J4] V. U. Castrillo, D. Pascarella, G. Pigliasco, I. Iudice, and A. Vozella, "Learning-in-games approach for the mission planning of autonomous multi-drone spatio-temporal sensing," *IEEE Access*, vol. 12, pp. 77 586–77 604, 2024.

[J5] D. Darsena, G. Gelli, I. Iudice, and F. Verde, "Sensing technologies for crowd management, adaptation, and information dissemination in public transportation systems: A review," *IEEE Sensors Journal*, vol. 23, pp. 68–87, 2023.

[J6] ——, "Detection and blind channel estimation for UAV-aided wireless sensor networks in smart cities under mobile jamming attack," *IEEE Internet of Things Journal*, vol. 9, no. 14, pp. 11 932–11 950, 2022.

[J7] ——, "Separable MSE-based design of two-way multiple-relay cooperative MIMO 5G networks," *Sensors*, vol. 20, no. 21, 2020. [Online]. Available: https://www.mdpi.com/1424-8220/20/21/6284

[J8] ——, "Design and performance analysis of channel estimators under pilot spoofing attacks in multiple-antenna systems," *IEEE Transactions on Information Forensics and Security*, vol. 15, pp. 3255–3269, 2020.

[J9] ——, "Equalization techniques of control and non-payload communication links for unmanned aerial vehicles," *IEEE Access*, vol. 6, pp. 4485–4496, 2018.

[J10] ——, "Second-order statistics of one-sided CPM signals," *IEEE Signal Processing Letters*, vol. 24, no. 10, pp. 1512–1516, Oct. 2017.

Refereed conference papers

[C1] D. Darsena, F. Verde, I. Iudice, and V. Galdi, "Downlink sum-rate maximization for joint active and passive stacked intelligent metasurfaces." NY, USA: IEEE, 2024, pp. 1–6.

[C2] I. Iudice, D. Pascarella, G. Corraro, and G. Cuciniello, "A real/fast-time simulator for impact assessment of spoofing & jamming attacks on GNSS receivers," in *2024 11th International Workshop on Metrology for AeroSpace (MetroAeroSpace)*, 2024, pp. 309–314.

[C3] D. Darsena, G. Gelli, and I. Iudice, "CycloDSP: A cyclostationary signal analysis tool for GNU Radio," in *2024 IEEE Aerospace Conference*, 2024, pp. 1–8.

[C4] D. Pascarella, V. U. Castrillo, I. Iudice, G. Pigliasco, and A. Vozella, "Game-theoretic learning for the coordination of drone teams in autonomous cooperative inspection," *Journal of Physics: Conference Series*, vol. 2716, no. 1, p. 012058, mar 2024. [Online]. Available: https://dx.doi.org/10.1088/1742-6596/2716/1/012058

[C5] D. Darsena, G. Gelli, I. Iudice, and F. Verde, "Exploiting doppler diversity for inter-satellite multiple access in massive leo constellations," in *2023 IEEE International Conference on Communication, Networks and Satellite (COMNETSAT)*, 2023, pp. 401–406.

[C6] V. U. Castrillo, I. Iudice, D. Pascarella, G. Pigliasco, and A. Vozella, "Game-theoretic mission planning of drone teams in autonomous detection and recognition," in *2023 IEEE International Workshop on Technologies for Defense and Security (TechDefense)*, 2023, pp. 197–202.

[C7] ——, "A real-time simulation framework for powerline communications in more-electric aircraft and spacecraft," in *2023 IEEE 10th International Workshop on Metrology for AeroSpace (MetroAeroSpace)*, 2023, pp. 72–77.

[C8] D. Darsena, I. Iudice, and F. Verde, "A sky-ground NOMA receiver for cellular-connected UAVs," in *2022 International Symposium on Wireless Communication Systems (ISWCS)*. Hangzhou, China: IEEE, 2022, pp. 1–6.

[C9] F. Corraro, G. Cuciniello, I. Iudice, D. Ferraro, and G. Negro, "Development and experimental validation of a GNSS receiver simulator for flight missions in hostile environments," in *35th International Technical Meeting of the Satellite Division of The Institute of Navigation (ION GNSS+ 2022)*, 2022, pp. 2163–2177.

[C10] G. Gelli, I. Iudice, and D. Pascarella, "A cloud-assisted ADS-B network for UAVs based on sdr," in *2022 IEEE 9th International Workshop on Metrology for AeroSpace (MetroAeroSpace)*, 2022, pp. 7–12.

[C11] D. Darsena, G. Gelli, I. Iudice, and F. Verde, "Widely-linear transceiver design for amplify-and-forward MIMO relaying," in *2016 IEEE Sensor Array and Multichannel Signal Processing Workshop (SAM)*, Jul. 2016, pp. 1–5.

[C12] D. Darsena, G. Gelli, F. Verde, and I. Iudice, "LTV equalization of CPM signals over doubly-selective aeronautical channels," in *2016 IEEE Metrology for Aerospace (MetroAeroSpace)*, Jun. 2016, pp. 75–80.

[C13] ——, "Blind LTV shortening of doubly selective OFDM channels for UAS applications," in *2015 IEEE Metrology for Aerospace (MetroAeroSpace)*, Jun. 2015, pp. 557–561.

[C14] A. Manco, I. Iudice, and V. Castrillo, "Design of basic receiving functions for an SDR based QPSK base band demodulator for a reconfigurable datalink," in *2013 Wireless Innovation European Conference on Wireless Communications Technologies and Software Defined Radio (SDR-WInnComm-Europe)*, Jun. 2013, pp. 90–95.

[C15] R. V. Montaquila, I. Iudice, and V. U. Castrillo, "Design of a radio channel simulator for aeronautical communications," in *International Telemetering Conference*, Oct. 2012.

[C16] A. Capozzoli, C. Curcio, I. Iudice, A. Liseno, and S. Savarese, "Fast imaging of vegetation on GPUs based on non-uniform FFTs," in *2011 International Conference on Electromagnetics in Advanced Applications*, Sep. 2011, pp. 1205–1208.

Bellona, June 3, 2025.

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