

# ► Danilo Comminiello

- Position: Associate Professor
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## EDUCATION

- 2012: **Ph.D degree in Information and Communication Engineering**, Sapienza University of Rome, Italy
- 2008: **M.Sc. degree in Telecommunication Engineering**, Sapienza University of Rome, Italy
- 2004: **B.Sc. degree in Telecommunication Engineering**, Sapienza University of Rome, Italy

## PROFESSIONAL EXPERIENCE

- Nov. 2019 – Today: **Associate Professor**, Sapienza University of Rome, Italy
- Nov. 2016 – Nov. 2019: **Tenure-Track Assistant Professor**, Sapienza University of Rome, Italy
- Mar. 2012 – Nov. 2016: **Postdoctoral Research Fellow**, Sapienza University of Rome, Italy
- Oct. 2010 – Jan. 2011: **Visiting Ph.D. Student**, Universidad Carlos III de Madrid, Spain
- Sept. 2007 – May 2008: **Intern Service Engineer**, Ericsson Telecomunicazioni S.P.A., Rome, Italy

## RECENT FUNDING GRANTS AS PRINCIPAL INVESTIGATOR

- 2024. Principal Investigator for “**Progetti di Ricerca 2024 – Progetti Medi – Sapienza Università di Roma**” with the project “Q-MIND: Quaternion AI for Multimodal Inference and Understanding”. Grant value: 10.680€.
- 2023. Principal Investigator for the national program “**Progetti di Ricerca di Rilevante Interesse Nazionale - PRIN 2022**” of the Ministero dell’Università e della Ricerca” with the project “EXEGETE: Explainable Generative Deep Learning Methods for Medical Image and Signal Processing”. Grant value: 246.634€ (of which 111.303€ for the local unit).
- 2022. Principal Investigator for “**Intervento per il Rafforzamento della Ricerca e Innovazione nel Lazio**” with the project “Hypercomplex Generative Deep Learning for Energy-Efficient AI Applications”. Grant value: 72.948,66€.

## RECENT AWARDS

- **Outstanding Area Editor** – for the magazine “IEEE Signal Processing Magazine”, Aug 2025.
- **Outstanding Associate Editor** – for the journal “IEEE Transactions on Neural Networks and Learning Systems”, Sep 2023.
- **Best Manuscript Award at ISCAS 2022** – for the paper “Efficient Sound Event Localization and Detection in the Quaternion Domain” authored by C. Brignone, G. Mancini, E. Grassucci, A. Uncini, and D. Comminiello, presented at the 55<sup>th</sup> IEEE International Symposium on Circuits and Systems (ISCAS), Austin, TX, May 2022.
- **TensorFlow Faculty Award 2021** – for the course of Generative Deep Learning.

## MAIN MEMBERSHIP ACKNOWLEDGEMENTS

- 2025 – 2026: Elected Chair of the **IEEE Machine Learning for Signal Processing (MLSP) Technical Committee** (IEEE SPS).
- 2025 – 2026: Member of the **IEEE Signal Processing Society Technical Directions Board** (IEEE SPS).
- 2023 – Today: Chair of the **Task Force on Computational Audio Processing** (IEEE CIS).
- 2023 – Today: Elected Treasurer of the **IEEE CAS Chapter Central and South Italy** (IEEE CAS).
- 2019 – Today: Member of the **IEEE Machine Learning for Signal Processing (MLSP) Technical Committee** (IEEE SPS).

## MAIN EDITORIAL ACTIVITIES

- 2024 – Today: Area Editor for **IEEE Signal Processing Magazine**.
- 2022 – Today: Associate Editor for **IEEE Transactions on Neural Networks and Learning Systems**.
- 2018 – 2020: Associate Editor for **IEEE Transactions on Circuits and Systems, I: Regular Papers**.

## MAIN CONFERENCE ORGANIZATION ROLES

- ▶ **General Chair** of the INNS International Joint Conference on Neural Networks (IJCNN 2025), Rome, Italy, Jun. 30 – Jul. 5, 2025.
- ▶ **General Chair** of the IEEE Symposium on CI in Image, Signal Processing and Synthetic Media (CISM), part of the IEEE Symposium Series on Computational Intelligence (SSCI 2025), Trondheim, Norway, Mar. 17–20, 2025.
- ▶ **General Chair** of the 33rd IEEE International Workshop on Machine Learning for Signal Processing (MLSP 2023), Rome, Italy, Sep. 17–20, 2023.
- ▶ **Technical Program Chair** of the IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2027), Toronto, Canada, May 16–21, 2027.
- ▶ **Finance Chair** of the IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2029), Copenhagen, Denmark, May 2029.

## RECENT TALKS

- ▶ 2023 – Invited Talk on “Weaving Time, Space & Semantics: Multimodal Alignment for Audio-Visual Generation” at the Workshop on Generative AI for Audio-Visual Content Creation of the **International Conference on Computer Vision (ICCV 2025)**, Honolulu, Hawaii, Oct. 19, 2025.
- ▶ 2024 – Lecture Tutorial on “Hypercomplex Neural Networks for Multidimensional Data” at the **International Joint Conference on Neural Networks (IJCNN)** at the IEEE World Congress on Computational Intelligence (WCCI 2024), Yokohama, Japan, Jun. 30, 2024.
- ▶ 2023 – Invited Talk on “Generative AI for Audio Semantic Communication” – **BrainLink 2023 – Semantic Communication for 6G**, Pyeongchang, South Korea, Nov. 9, 2023.
- ▶ 2023 – Invited Talk on “Demystifying the Hypercomplex: Inductive Bias and Applications of Hypercomplex Neural Networks” – **KAIST University**, Daejeon, South Korea, Nov. 6, 2023.
- ▶ 2023 – Lecture Tutorial on “Shape the Noise: A Tutorial on Generative AI and its Transformative Role in ICT” at the Annual Meeting of the **GTTI 2023** (Gruppo Telecomunicaz. e Tecnologie dell'Informazione), Rome, Italy, Sept. 13, 2023.
- ▶ Invited Talk on “Deep Generative Latent Models for Multidimensional Signals in the Quaternion Domain: An Information-Theoretic Perspective” – **Santa Clara University**, CA, May 23, 2023.

## SELECTED PUBLICATIONS

- ▶ **D. Comminiello**, E. Grassucci, D. P. Mandic, A. Uncini, “Demystifying the Hypercomplex: Inductive Biases in Hypercomplex Deep Learning”, *IEEE Signal Processing Magazine*, Vol. 41, no. 3, May 2024.
- ▶ S. Barbarossa, **D. Comminiello**, E. Grassucci, F. Pezone, S. Sardellitti, P. Di Lorenzo, “Semantic Communications Based on Adaptive Generative Models and Information Bottleneck”, *IEEE Communications Magazine*, 2023.
- ▶ E. Guizzo, T. Weyde, S. Scardapane, and **D. Comminiello**, “Learning Speech Emotion Representations in the Quaternion Domain”, *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, Early Access, Mar. 2023.
- ▶ E. Grassucci, A. Zhang, and **D. Comminiello**, “PHNNs: Lightweight Neural Networks via Parameterized Hypercomplex Convolutions”, *IEEE Transactions on Neural Networks and Learning Systems*, Early Access, Dec. 2022.
- ▶ “Adaptive Learning Methods for Nonlinear System Modeling”, **D. Comminiello** and J. C. Principe, Eds., ISBN: 9780128129760, Elsevier, June 2018.
- ▶ S. Scardapane, M. Panella, **D. Comminiello**, A. Hussain, and A. Uncini, “Distributed Reservoir Computing with Sparse Readouts”, *IEEE Computational Intelligence Magazine*, vol. 11, no. 4, pp. 59-70, November 2016.
- ▶ M. Scarpiniti, **D. Comminiello**, G. Scarano, R. Parisi, and A. Uncini, “Steady-State Performance of Spline Adaptive Filters”, *IEEE Transactions on Signal Processing*, vol. 64, no. 4, pp. 816-828, February 2016.
- ▶ S. Scardapane, **D. Comminiello**, A. Hussain, and A. Uncini, “Group Sparse Regularization for Deep Neural Networks”, *Neurocomputing*, vol. 241, pp. 81-89, June 2017.
- ▶ **D. Comminiello**, M. Scarpiniti, L. A. Azpicueta-Ruiz, J. Arenas-García, and A. Uncini, “Functional Link Adaptive Filters for Nonlinear Acoustic Echo Cancellation”, in *IEEE Transactions on Audio, Speech, and Language Processing*, vol. 21, no. 7, pp. 1502-1512, July 2013.
- ▶ M. Scarpiniti, **D. Comminiello**, R. Parisi, and A. Uncini, “Nonlinear Spline Adaptive Filtering”, in *Signal Processing*, vol. 93, no. 4, pp. 772-783, April 2013.

The full list of publications is available on [Google Scholar](#) or on my [personal website](#).