Curriculum Vitae

Name: **Paolo** Family name: **Banelli**

Date of birth: **May 19th, 1968**

WORKING EXPERIENCE and QUALIFICATIONS

- *September 2019* Full Professor in Signal Processing and Telecommunications, Faculty of Engineering, University of Perugia, Perugia, Italy.

- *December 2013:* Scientific qualification for a Full-Professor position in signal processing and telecommunications in Italian Universities., granted by a national committee. (confirmed also in January 2015 and July 2018)

- *November 2005:* Associate Professor in Telecommunications & Signal Processing), Faculty of Engineering, University of Perugia, Perugia, Italy.

- *1997–2005*: Assistant Professor at the Dept. of Electronic and Information Engineering, University of Perugia, Perugia, Italy.

- *1993–2000:* Technical Consultant for Itelco spa, Orvieto, Italy (Broadcasting transmission techniques)

EDUCATION

- *June 1998:* "Dottorato di Ricerca (Ph.D.) in Ingegneria Elettronica" at University of Perugia, Italy, Thesis on "Non Linear Distortion analysis and predistortion in OFDM systems".

- *September 1993:* "Laurea in Ingegneria Elettronica" (Master Science in Electronics), University of Perugia, Italy.

- *July 1986:* Diploma di Maturità Scientifica (Scientific Lyceum High School Diploma) at "Liceo Scientifico G. Alessi" in Perugia, Italy.

SHORT SUMMARY OF THE RESEARCH ACTIVITY

My research activity focused for several years on the analysis and compensation of non-linear distortions in telecommunication systems. Particular attention has been reserved to the sensitivity of OFDM systems to non-linear distortions introduced by high-power amplifiers, as it happens in Broadcasting (DAB, DVB-T) and WLAN (IEEE 802.11) systems. From 1995 to 2000, a significant part of this activity has been conducted in collaboration with Itelco (now Electrosys). The collaboration with Itelco led also to the realization and patenting of a Baseband and a Mixed Baseband-IF predistorter [PT2][PT3].

Around 2000, Multiuser (MU) Detection for wideband CDMA attracted my attention, with a specific interest on the sensitivity of MMSE blind multiuser detectors to channel and correlation-matrices estimation errors, and on the theoretical performance analysis of MU-CDMA systems in non-linear fading channels. [R37][R36][R35][R34]

Since 2001, after a 6-months visiting at ECE Department of University of Minnesota (Prof. G. B. Giannakis), my research interests mainly focused on block-transmission techniques and the associated signal processing for wireless communication systems (e.g., OFDM, Multicarrier-CDMA, etc.). Specifically, I have been working on the performance degradation induced by carrier-frequency-offset (CFO) at the receiver side [R32], on linear-

precoding techniques with local maximum likelihood reception [R31], channel estimation and equalization.

Starting from 2004-2005, the research on wireless block-transmission techniques mainly focused on channel estimation and low complexity equalization in time-varying frequency-selective fading channels, in multipath scenarios with high Doppler spreads [R30][R29][R28][R27] [C34][C36]. This research topic has been also the opportunity to strength the scientific collaboration, started in 2001, with Prof. G. Leus, Technical University of Delft, Delft, the Netherlands. In this framework, the analysis started from single-antenna OFDM systems with classical linear equalization, it has been extended to fast time-varying channels in MIMO systems, as well as to iterative and turbo equalization approaches [C25]. In the last few years, although my research interest partially moved to other topics that I will detail below, I have been still active on signal waveform design for 5G communications, and beyond [R20].

The broad research expertise on OFDM and Multicarrier Signal Processing, received the appreciation of the international research community, as testified by the quite significant number of citations received by the papers published on this subject. Furthermore, I have been invited to contribute with a chapter to the Academic Press Library in Signal Processing, an e-encyclopedia launched by Elsevier [B4], edited Prof. R. Chellappa (Univ. of Meryland, USA) and Prof. S. Theodoridis (Univ. of Athens, Greece), with two chapters [B1] [B6] to a book edited by Prof. F. Hlawatsch, and Prof. G. Matz (Wien University of Technology, Austria), which collected an outstanding pool of researchers.
The wide expertise on this subject facilitated also technical collaboration with private companies, and I was the scientific coordinator of research projects funded by Magneti-Marelli Motorsport (IT) [P15], Frontier Silicon (UK)/Silansys Technologies (EIRE) [P10], Electrosys (IT) [P11], and more recently by Xibo (IT) [P5][P6].

In 2007-2008, the participation as a member of CNIT (National Interuniversity Consortium for Telecommunications) to SatNex II (FP6 Network of Excellence) was the opportunity to focus the attention to data-link and physical cross-layer designs. The goal was to boost the throughput of satellite links under prescribed BER performance constraints. In this context, it has been proposed a new scheduling policy for systems that exploit data-link ARQ protocols and Adaptive Modulation and Coding (AMC) at the physical layer. Furthermore, it has been proposed a general framework to establish the theoretical delay, throughput, and packet-loss rate performance of those scheduling policies that take into account of the buffer occupancy and of the number of retransmissions by ARQ [R25].

Between 2006 and 2012 I supervised some laboratory experimentation, in the field of bio-medical engineering. Specifically, since 2006 with a small research group of MS students and a couple of PhD students, we focused on the design and implementation of a portable ECG device, and of an ultrasound echo-graphic laboratory test-bed. Signal processing and identification algorithms have been designed and implemented on this hardware, to assist medical diagnosis. Furthermore, some scientific contributions have been published in the fields of ultrasound coded-excitation medical imaging [C23][R24], pacemaker detection on ECG tracks [C28], and ECG tracks compression [C27] (in collaboration with Prof. M. G. Martini, Kingston University, London, UK).

The bio-medical activity led in 2010 to run a University Spin-Off (ICT4Life srl) founded together with 3 university colleagues and 5 Ph.D. students. The

mission of ICT4Life was to apply ICT technologies to improve the quality of “Life”, in a broad extent, including eHealth applications. Between 2010 and 2013 I was the scientific co-director and vice-president of ICT4Life, whose activity spans instrumentations and algorithms for medical applications, medical information systems and telemedicine, system biology, as well as genomic and proteomics. In 2015, together with all the other academic colleagues, we left ICT4Life, which is still active.

From 2013 my research efforts were directed mostly to (collaborative) spectrum sensing policies for cognitive radios [R23] [C21] [C18] [C17], detection on impulsive noise environments [R22][R16], and general theoretical insights on the link between estimation theory, channels capacity and non-linear distortions under non-Gaussian noise statistics [R19].

Since 2015, my research interests have been attracted by signal processing on graphs, coupled with adaptive and distributed signal processing and optimization. Signal processing on graphs is a theoretical subject that rapidly emerged in the signal processing and networks science literature, which is capable to model (Big-) data on a more general non-metric space (i.e., a graph), with respect to classical discrete signal processing, In this framework, I am interested in sparse signal representations, sampling and reconstruction, distributed and adaptive statistical inference, as well as network inference.

Applications may vary from (statistical) brain signal analysis, monitoring and control, to sensor and telecommunication networks, social networks, vehicular and power-grid networks, as well as gene-regulatory networks [R14][R13][R17][R18] [R18]. This research topic has been developed in collaboration with Prof. P. Di Lorenzo, and Prof. S. Barbarossa from University of Rome "La Sapienza", and partially with Prof. G. Leus and E. Isufi, from University of Delft, in the Netherlands. I also co-authored a chapter on a book edited by Prof. P. M. Djuric (Stony Brook University, Long Island, NY) and Prof. C. Richard (Univ. of Nice Sophia-Antipolis, France), which collected an outstanding pool of researcher [B1].

August 2019, July 2020 I have been a Visiting Professor at Stony Brook University, NY, USA, where I established a research collaboration with Prof. Petar Djuric, on subjects related to brain-networks signal analysis and learning 0. This collaboration led to an interesting fully Bayesian framework, leveraging on Gaussian Processes, to learn the edge of a graph by observing time series of data collected by its nodes [C5][R2].

Around 2020, within the PRIN founded project Liquid-Edge [P2], I started working on Goal-oriented communications, a promising and rapidly emerging framework for machine learning and AI enabled by wireless edge-computing. This activity has been developed in collaboration with Prof. P. Di Lorenzo, and Prof. S. Barbarossa from University of Rome "La Sapienza”. Specifically, we have been focusing on a holistic resource management and control of communication systems, including both transmissions, computational and learning resources, such that learning tasks of single, or multiple (possibly collaborating) users, is fulfilled with the desired tradeoff among accuracy, delay and energy consumption. [C2] [C3] [C4] [C6][R3] [R5] [R7] [R8] [R11].

This activity continued in the NetWin project [P1], within the PNRR RESTART action (2023-2025), where we investigated efficient semantic compression of the information to be transmitted, as well as coupling Lyapunov optimization with conformal risk control, to handle resource

optimization policies with both deterministic and statistical reliability guarantees [C1] [R1].

At the end of this document, there is detailed list of technical manuscripts I have published on these subjects. The good quality of this scientific production is testified by the quite high number of citations received throughout my entire carrier, both from theoretical papers, and more application-oriented ones.

TECHNICAL & SCIENTIFIC ACTIVITIES

- *Jan. 2020, present* Associate Editor for the IEEE Open Journal on Signal Processing.

- *Jan 2013-Dec. 2016,* Associate Editor for the IEEE Transaction on Signal Processing (2+2 years term).

- *Jan 2013-Dec. 2020,* Associate Editor for the EURASIP Journal on Advances in Signal Processing, Springer Ed.

- *2011-2014 (3 years term)*, Elected by international colleagues as a member of the Signal Processing for Communications and Networking Technical Committee (SPCOM-TC) of the IEEE Signal Processing Society.

- *2011-2013 (3 years term)*, Member of the Scientific Committee at CNIT, National Inter-University Consortium for Telecommunications, as representative of the CNIT Research Unit in Perugia.

- *2009*, General Co-Chair for IEEE SPAWC 2009, Int. Workshop on Signal Processing Advances for Wireless Communications, Perugia, Italy, June 2009.

- 2019-2020, Tutorial Co-Chair, for EUIPCO 2020, European Signal Processing Conference, Amsterdam, The Netherlands, September 2020.

- 2018, Track Chair for Eurasip EUSIPCO 2018, European Signal Processing Conference, Rome, Italy, September 2018.

- *2012, 2014* TPC-Member for IEEE ICASSP, Int. Conf. on Acoustics, Speech and Signal Processing.

- *2009, 2011, 2012, 2013* TPC-Member for IEEE SPAWC, Int. Workshop on Signal Processing Advances for Wireless Communications (10-15 reviews each year).

- *2004, 2005, 2007, 2008, 2010, 2013* TPC Associate-Reviewer for IEEE ICASSP, Int. Conf. on Acoustics, Speech and Signal Processing, (8-10 reviews each year).

- 2010, TPC Associate-Reviewer for SPAWC 2010, Int. Workshop on Signal Processing Advances for Wireless Communications.

- *2005, 2007, 2008*, TPC-Member for IEEE ICC' Int. Conference on Communications.

- *2008*, Member of the Scientific Committee for the annual meeting of the Italian Group for Telecommunications and Information Technology (GTTI), Firenze.

- *2006*, TPC-Member for IEEE ISSPIT, Int. Symposium on Signal Processing and Information Technology.

- *2006, 2007*, TPC-Member for IEEE Globecom, Satellite and Space Comm. Symposium.

- *2006*, 2008, 2013, 2017 TPC-Member for EURASIP EUSIPCO, European Signal Processing Conference.

- Member of commissions to assign Italian Research Assistant positions: Univ. of Napoli "Federico II" (2003), Univ. of Padova (2005).

- Member of commissions for Italian Ph.D. final exam: Univ. of Perugia (2009), Univ. of Padova (2010), Univ. of Pisa (2012), Univ. of Roma "La Sapienza" (2013), Polytechnic University of Marche (2016).

- ***REVIEWER for the following International Journals***

  - o IEEE Transactions on Signal Processing
  - o IEEE Transactions on Wireless Communications.
  - o IEEE Transactions on Communications.
  - o IEEE Transactions on Information Theory.
  - o IEEE Transactions on Vehicular Technology.
  - o IEEE Transactions on Instrumentations and Measurements.
  - o IEEE Signal Processing Letters.
  - o IEEE Communications Letters.
  - o European Transactions on Communications (Wiley).
  - o EURASIP Signal Processing Journal (Elsevier).
  - o EURASIP Journal on Applied Signal Processing (Hindawi/Springer).
  - o EURASIP Journal on Wireless Commun. and Networking (Hindawi).
  - o Electronic and Telecomm. Research Institute Journal (ETRI).

FUNDS RAISING & RESEARCH PROJECTS COORDINATION

[P1] 2024-2025, Local scientific coordinator of the Perugia Research Unit, as a cascade call of the structural project NETWIN (Network Intelligence), coordinated by Prof. Sergio Barbarossa, included in the national PNRR project RESTART (RESearch and innovation on future Telecommunications systems and networks, to make Italy more smART) (540 k€)

[P2] *2020-2023*, Local scientific coordinator of the Perugia Research Unit, within the national call PRIN 2017, of the research project "Liquid edge computing based on distributed machine learning and millimeter-wave radio access", national coordinator Prof. S. Barbarossa. (113 k€)

[P3] *2015-2017*, local scientific coordinator for research and innovation support on the project «New Burn-In System for semiconductors and integrated modules", MISE call for Funds for Sustainable Growth of H2020 objectives, D.M. 20 June 2013, Project n. F/0106/01-02/X26 - prime contractor EDA INDUSTRIES S.P.A. (28 k€).

[P4] 2016, scientific coordinator of "DVB-T software radio transmitter eXtension for IRIS (DVB-TX-IRIS)", 1st Open Call of the European Research Project H2020 "WiSHFUL - Wireless Software and Hardware platforms for Flexible and Unified radio and network controL" (H2020 GA No. 645274), (56 k€)

[P5] *2014,* scientific coordinator of the consulting project for Xibo, " Underwater Acoustic Modem", (10 k€)

[P6] *August-September 2013*, scientific coordinator of the consulting project for Xibo," Preliminary study for an Underwater Acoustic Modem", (2 k€)

[P7] *2009-2010*, local scientific coord. of the project" Diagnostic Robots: new systems based on autonomous mobile robots for diagnosis and test in production-lines and life-cycle laboratories", co-funded by Regione Marche and AEA (Loccioni Group), call POR-FESR 2006-2013 (30 k€)

[P8] *2008*, scientific coordinator of the project "Industrialization of a portable ECG system" co-funded by Regione Umbria and private companies on the call POR-FESR SISTEMA 2007 (70 k€).

[P9] *2008*, Italian scientific coordinator of a collaboration project with Kingston University, London on "Reconfigurable Healthcare for Intelligent Cardio Vascular Disease Monitoring and Management", British Council-Italian CRUI Partnership Program for Young Researchers 2007-2008 (5 k€).

[P10] *2007*, scientific coordinator of a consulting project for Frontier Silicon, Dublin, Ireland, on "Channel estimation and equalization for DVB-T/H system in high mobility" (23 k€).

[P11] *2007*, scientific coordinator of a consulting project for Electrosys, Orvieto, on "Echo cancellers for DVB-T/H Gap Fillers" (20 k€).

[P12] 2006-2008, scientific coordinator of a regional co-funded project within the 2005 call of Fondazione Cassa di Risparmio di Perugia, on "Realization of a PC-based laboratory platform to develop innovative eco-graphic systems for medical applications" (50 k€).

[P13] *2006*, scientific coordinator of a regional co-funded project within the 2005 call of Fondazione Cassa di Risparmio di Perugia, on "Prototyping and pre-industrialization of an ECG system" (21 k€).

[P14] *2006-2009* CNIT local scientific responsible for "Channel estimation and equalization for mobile satellite communications" within SatNex II, FP6 Network of Excellence, European Union (21 k€).

[P15] *2005-2006*, scientific coordinator of a consulting project for Magneti Marelli Holding Motorsport, on "Study and simulation of a telemetry system for racing competitions" (30 k€).

[P16] *2003-2004* local scientific coordinator within the national call PRIN 2002, on "MC-CDMA: a radio interface for 4th generation radio mobile systems," national coordinator: Prof. S. Pupolin. (43k€)

AWARDS

1st classified with ICT4Life srl (Scientific Co-Director and Vice-President) to Umbria-Marche StartCup 2010 competition for business-plan ideas generated by university research, Perugia, Italy, Oct. 2010 (prize ~ 10 k€)

INTERNATIONAL EXCHANGES AND COLLABORATIONS

-*August 2019-July 2020* Visiting Professor with the group of Prof. Petar Djuric, ECE Department, University of Stony Brook, Stony Brook, NY, USA.

- *2001 (6 months):* Visiting Assistant Professor at the SpinComm research group, of Prof. Georgios B. Giannakis, ECE Department, University of Minnesota, Minneapolis, MN, USA.

- *2001-2005:* scientific collaboration with Prof. Georgios B. Giannakis, ECE Department, University of Minnesota, Minneapolis, MN, USA.

- *2001-present:* scientific collaboration with Prof. Geert Leus, Delft Univ. of Technology (DUT), Dept. EEMC, 2628CD Delft, the Netherlands.

- *2010-2014:* scientific collaboration with Doct. H. Suraweera, Singapore University of Technology and Design, Singapore.

- *2008-2009:* scientific collaboration with Prof. M. G. Martini, Kingston University, Faculty of Science, Engineering and Computing, London, UK.

- *2007-2009*: scientific collaboration with Doct. Matteo Berioli, DLR German Aerospace Center, Institute of Communications and Navigation, Oberpfaffenhofen-Wessling, Germany.

- *2016-present*: scientific collaboration with Prof. Sergio Barbarossa, University of Rome "La Sapienza", Roma, Italy.

- *2000-2006:* Local Coordinator of the Erasmus student exchange program with European Institute of Higher Education Brussels (EHSAL), Belgium.

- *2003-2010* Local Coordinator of the Erasmus, Erasmus+ student exchange program with EEMC Dept., Delft Univ. of Technology, the Netherlands.

- **International Ph.D. Defense Committees**

  - Ph.D. defense of E. Isufi, "Signal Processing on Graphs", TU Delft, Dept. EEMCS, January 28th, 2019.

  - Ph.D. defense of K. Fang, "Wireless communication over dispersive channels", TU Delft, Dept. EEMCS, March, 1st, 2009.

    Ph.D. defense of Z. Tang, "OFDM transmission over rapidly changing channels", TU Delft, Dept. EEMCS, November, 20th, 2007.

- **Invited Talks & Seminars**

  - The Opportunistic Information Bottleneck for Edge Machine Learning and Goal-Oriented Communications, Stony Brook University, Stony Brook, NY, USA, May 14th,, 2024.

  - Goal-Oriented Wireless Communications for Edge-Assisted Machine Learning, 2022 IEEE SPS / EURASIP Summer School on Graph and Data Driven Learning for Communications and Signal Processing, Banja Luka, Bosnia Erzegovina, Sept. 8th, 2022.

  - Coded-Excitation for Ultrasound Echography, EEMCS Department, Delft University of Technology, Delft, The Netherlands, March 1st, 2010.

  - OFDM in Time-Varying Channels: Equalization Challenges and Solutions, Forschungszentrum Telekommunikation Wien (FTW), June 1st, 2007.

TEACHING ACTIVITY

- *1998-2000:* Teaching Assistant in the "Teoria dei Segnali" course for the Laurea Degree (BS+MS) in Electronics and Telecommunications at University of Perugia, Italy.

- *1998-2000:* Teaching Assistant in the "Sistemi di Telecomunicazione" course for the Laurea Degree (BS+MS) in Electronics and Telecommunications at University of Perugia, Italy.

- *A.A.1998/99- A.A. 2006/07:* Teacher of the "Elaborazione Analogica dei Segnali" class for the Laurea (BS) Degree in Computer Science and Telecommunic., Orvieto, University of Perugia, Italy, (45 hours/year).

- *A.A. 2001/02 - A.A. 2002/03 and A.A. 2006/07:* Teacher of the "Teoria dei Fenomeni Aleatori" course for the Laurea Degree (BS) in Computer Science and Telecommunications, Orvieto, University of Perugia, Italy (27 hours/year).

- *A.A. 2005/06:* Teacher of the module "Tecniche di Simulazione" within the II level Master in 2G-3G Telecommunication Systems at University of Perugia, Italy (20 hours/year).

- *A.A.2001/02-A.A.2007/08:* Teacher of the "Elaborazione Analogica dei Segnali" course for the Laurea Degree (BS) in Electronics and Telecommunications at University of Perugia, Italy. (45 hours/year).

- *A.A.2008/09-A.A.2023/24 (except 2019/20):* Teacher of the "Teoria dei Segnali" course for the Laurea Degree (BS) in Computer and Electronics Engineering at University of Perugia, Italy. (81 hours/year).

- *A.A. 2009/10:* Teacher of the "Metodi probabilistici e statistici per l'Ingegneria dell'Informazione" within the PhD Doctorate in Information Engineering at University of Perugia, Italy, (10 hours/year).

- *A.A. 2011/12 - A.A. 2012/13:* Teacher of the "Trasmissioni Wireless" module within the course "Metodi di Stima e Trasmissioni Wireless" for the Magister Laurea (MS) Degree in Electronics and Telecommunications at University of Perugia, Italy (48 hours/year).

- *A.A. 2013/14 - A.A. 2016/17:* Teacher of the "Trasmissioni Wireless" course for the Magister Laurea (MS) Degree in Electronics and Telecommunications at University of Perugia, Italy (72 hours/year).

- *A.A. 2017/18 - A.A. 2023/24 (except 2019/20):* Teacher of the "Signal Processing and Optimization for Big Data" course for the Magister Laurea (MS) Degree in Computer Engineering and Robotics, University of Perugia, Italy. (72 hours/year. 30 hours taught by Prof. P. Di Lorenzo in 2017/2018)

- *A.A. 2016/17:* Teacher of the module "Fundamentals of Stochastic Signals" within the II level (post Laurea) Master in Data Science at University of Perugia, Italy (14 hours/year).

- *A.A. 2019/2020:* Teacher of BS course ESE 340 "Basic Communications Theory" at Stony Brook University, NY, USA. (40 hours).

- - *A.A. 2019/2020:* Teacher of BS course ESE 305 "Deterministic Signals and Systems" at Stony Brook University, NY, USA. (40 hours).

- Laurea Thesis advisor

Since 1998, when I started my academic career, I have been advising and mentoring perspective students towards their final Thesis at the end of their BS and MS degree. At the beginning of my career, most of the topics where on signal processing for wireless communications, while more focused on signal processing on networks in the recent years. However, part of them were also exploring different subjects, such a biomedical signal processing, underwater communications, and others. Some of the graduated students

wanted to continue their research activity by applying for a Ph.D. position under my supervision, as detailed in the following section.

- PhD/Post-Doc/ RTD-A supervision

- *2001-2003*, Luca Rugini**,** PhD Thesis "Analysis of multiuser communication systems with transmitter- and receiver-induced distortions".

- *2004-2008*, Luca Rugini, PostDoc Research Fellow ("Assegnista di Ricerca") on "signal processing for wireless communication systems", now Assistant Professor at University of Perugia, Italy.

- *2006* (1 year PhD candidate), Claudio Rocco Cannizzaro, now Senior Director, Advanced Analytics Research & Development at SAS, Cary, North Carolina, 27513, United States.

- *2006-2008*, Mario Poggioni, PhD Thesis, "Advanced algorithms for performance optimization in wireless fast-fading channels", now System Engineer at Art Group -Pischiello Centre, Tuoro sul Trasimeno (PG), Italy.

- *2007-2009*, Alessandro Polpetta, PhD Thesis, "Signal Processing Algorithms for Medical Systems: Design and Implementation", now Design Engineer at EDA Industries spa, Rieti, Italy.

- *2011*, Paolo Micanti, PostDoc Research Fellow ("Assegnista di Ricerca") on "Integration of medical diagnostic systems with wireless sensors and communications systems", now Senior Software Engineer at Bloomberg LP, Switzerland.

- *2015-2018*, Elvin Isufi, together with Prof. G. Leus, Delft University of Technology, The Netherlands, Ph.D Thesis "Graph-time Signal Processing: filtering and sampling strategies", now Assistant Professor at Delft University of Technology.

- *2014-2017,* Ph.D. student Loris Cannelli, together with Prof. G. Scutari, Purdue University, West Lafayette, IL, (USA), on "Parallel Non-Convex Optimization algorithms with applications to MRI reconstruction", now at Dalle Molle Institute for Artificial Intelligence (IDSIA), Lugano, Switzerland.

- 2021-2024, Ph D. student Francesco Binucci, on "Goal-oriented communications and information representation", to be defended beginning of 2025.

- *2015-2017,* Reference faculty-member for the Scientific research project "Distributed Optimization and Learning Over Complex Networks" associated with the temporary assistant professor position (RTD-A) granted to Ph.D. Paolo Di Lorenzo, now Associate Professor at University of "Roma La Sapienza".

OTHER DUTIES

- Sept- 2021 – present, Coordinator of the Teaching Council of Information Engineering, at University of Perugia, which coordinates the teaching activities, programs, etc., of a BS in Computer and Electronics Engineering, a MS in Computer and Robotics Engineering, and a MS in Electronic Engineering for Internet of Things.

- *April 2015 – August 2019*: Deputy of the Department Head for orientation activities of prospective high-school students and actual BS/MS students for all the MS/BS degrees offered by the Engineering Department.

- *2014-2019*, Delegate member for Associate Professors within the Board ("Giunta") of the Department Council.

- *2014-present,* Member of the Department Research Committee.

- *2013-2016* (3 years term), Member of the Directive Committee at CNIT, National Inter-University Consortium for Telecommunications, as a Deputy of the Dean of the University of Perugia.

IMPACT of the PUBLICATION ACTIVITY

The overall research activity has received a significant acknowledgement by the international research community as testified by the quite high number of citations reported in public dataset, such as Elsevier SCOPUS, Google Scholar and ISI Web of knowledge.

For instance, according to the **SCOPUS** data set, at the present date, the published manuscripts have received **2,774 citations** and the author has a personal **h-index** equal to **22**.

LIST OF PUBLICATIONS

My publications list is also accessible by Google-scholar at the link
http://scholar.google.com/citations?user=ohPQsLMAAAAJ&hl=en

- Book Chapters

[B1] P. Banelli, G. Colavolpe, L. Rugini and A.Ugolini, " Waveform design," Chapters 13 in Information Theoretic Perspectives on 5G Systems and Beyond, Eds., I. Marić, S. Shamai, O. Simeone, Cambridge University Press, Oct. 2020.

[B2] P Banelli, G Baruffa, S Buzzi, G Colavolpe, T Foggi, L Rugini, A Ugolini, "Modulations with Low Peak-to-Average Power Ratio," Wiley 5G Ref: The Essential 5G Reference Online, 1-20, 2019.

[B3] P. Di Lorenzo, S. Barbarossa, and P. Banelli, Sampling and Recovery of Graph Signals, Cooperative and Graph Signal Pocessing, Chapter II.2, P. Djuric and C. Richard Eds., Elsevier, 2018.

[B4] P. Banelli, L. Rugini, "OFDM and MC Signal Processing", Chapter 5 of Vol. 2 of Academic Press Library in Signal Processing, eds. R. Chellappa and S. Theodoridis, Academic Press, October 2013.

[B5] L. Rugini, P. Banelli, and Geert Leus "OFDM Communications over Time-Varying Channels", Chapter 7 of Wireless Communications Over Rapidly Time-Varying Channels," Franz Hlawatsch and Gerald Matz Ed., Elsevier Academic Press, 2011

[B6] Z. Tang, G. Leus, and P. Banelli, "Time-Varying Channel Estimation - A Block Approach," Chapter 3 of Wireless Communications Over Rapidly Time-Varying Channels," Franz Hlawatsch and Gerald Matz Ed., Elsevier Academic Press, 2011
http://www.elsevier.com/wps/find/bookdescription.cws_home/714571/description

- International Journals

[R1] F. Binucci, P. Banelli, P. Di Lorenzo, S. Barbarossa, "Opportunistic Information-Bottleneck for Goal-oriented Feature Extraction and Communication," IEEE Open Journal of Communication Society, vol. 5, pp. 2418-2432, April 2024.

[R2] C. Cui, P. Banelli, P. M. Djurić, "Topology Inference of Directed Graphs by Gaussian Processes with Sparsity Constraints," IEEE Trans. on Signal Processing, vol. 72, pp. 2147-2159, March 2024.

[R3] G. Baruffa, G. Costante, F. Crocetti, L. Rugini, P. Valigi, P. Banelli, A. Detti, "AI-driven Ground Robots: Mobile Edge Computing and mmWaves Communications at Work," IEEE Open Journal of Comm. Society, vol. 5, pp. 3104-3119, May 2024.

[R4] L. Rugini, P. Banelli, "Performance Analysis of Centralized Cooperative Schemes for Compressed Sensing", Sensors 2024, 24, 661, February 2024.

[R5] P. Di Lorenzo, M. Merluzzi, F. Binucci, C. Battiloro, P. Banelli, E. Calvanese Strinati, S. Barbarossa, "Goal-oriented Communications for the IoT: System Design and Adaptive Resource Optimization", IEEE Internet of Things Magazine, vol. 6, n. 4, pp. 26-32, Dec. 2023.

[R6] G. Baruffa, L. Rugini, F. Frescura, P. Banelli, "Low-Complexity PAPR Reduction by Coded Data Insertion on DVB-T2 Reserved Carriers," in IEEE Access, vol. 11, pp. 73377-73393, July 2023.

[R7] F. Binucci, P. Banelli, P. Di Lorenzo, S. Barbarossa, "Multi-user Goal-oriented Communications with Energy-efficient Edge Resource Management," in IEEE Trans. on Green Commun. and Networking, vol. 7, no. 4, pp. 1709-1724, May 2023.

[R8] F. Binucci, P. Banelli, P. Di Lorenzo, S. Barbarossa, "Adaptive Resource Optimization for Edge Inference with Goal-Oriented Communications," EURASIP Journal on Advances ion Signal Processing, vol. 2022, 123, pp. 34, December 2022,

[R9] N. Rozic, P. Banelli, D. Begusic and J. Radic, "GMM-based Symbol Error Rate Analysis for Multicarrier Systems with Impulsive Noise Suppression," in IEEE Trans. on Vehicular Tech., Aug. 2022.

[R10] N. Rožić, P. Banelli and A. Marusic, "Single- and Multi-Carrier Systems Affected by Impulsive Noise: Covid-19 View," in IEEE Access, vol. 10, pp. 25135-25152, 2022.

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