

PERSONAL INFORMATION

Giacomo Bacci



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Gender Male | Date of birth 26 July 1980 | Nationality Italian

WORK EXPERIENCE

March 2025 – present

Associate professor

University of Pisa, Dept. Information Engineering
Via Caruso, 16 – I-56122 Pisa, Italy

Scientific and industrial research in satellite and terrestrial communications
Teaching for M.Sc. and B.Sc. students in telecommunications, computer engineering, cybersecurity, and computer science
Mentoring for Ph.D. students in information engineering
Participation to international and national research projects

January 2025 – December 2026

Member of the Signal Processing for Communications and Networking (SPCOM) Technical Committee

Institute of Electrical and Electronics Engineers (IEEE) Signal Processing Society (SPS)
445 Hoes Lane – Piscataway, NJ, 08854, United States

Promotion of cross-fertilization between SPS and the communication networks community at the intersection of IEEE Communication Society and the IEEE Information Theory Society

October 2022 – Present

Collaborator

National Aeronautics and Space Administration (NASA)
300 E St SW – Washington, DC, 20546, United States

Scientific and industrial research in satellite communications and Earth observation
Participation to NASA research projects

March 2022 – February 2025

Tenure-track assistant professor

University of Pisa, Dept. Information Engineering
Via Caruso, 16 – I-56122 Pisa, Italy

Scientific and industrial research in satellite and terrestrial communications
Teaching for M.Sc. and B.Sc. students in telecommunications, computer engineering, cybersecurity, and computer science
Mentoring for Ph.D. students in information engineering
Participation to international and national research projects

January 2015 – February 2022

Product manager

Mediterranean broadband infrastructure (MBI) s.r.l.
Via Squartini, 7 – I-56121 Ospedaletto (PI), Italy

Research in industrial areas, including satellite and terrestrial communications
Participation to European research projects (H2020 QV-LIFT and H2020 SCORE, funded by the European Commission, ANChOR and INN3SCO, funded by the European Space Agency, Nefocast, funded by the Tuscany Region, and AIRONE, funded by the Italian Space Agency)

- February 2008 – December 2014 **Postdoctoral research fellow**
University of Pisa, Dept. Information Engineering
Via Caruso, 16 – I-56122 Pisa, Italy
Scientific and industrial research in satellite and terrestrial communications
Participation to European research projects (SOFT-REC, funded by the European Space Agency, FP6 NEWCOM, FP7 NEWCOM++, FP7 EULER, FP7 SANDRA, NEWCOM#, and SABER, funded by the European Commission)
- May 2012 – December 2014 **Visiting postdoctoral research fellow**
Princeton University, School of Engineering and Applied Science
Olden St. – Princeton, NJ, 08544, United States
Scientific research under the framework of the FP7 Marie Curie International Outgoing Fellowships for career development (IOF) 2011, Grant Agreement no. PEOF-GA-2011-302520 GRAND-CRU “Game-theoretic Resource Allocation for wireless Networks based on Distributed and Cooperative Relaying Units”, April 2012 - March 2014 (Total EC contribution: EUR 178,760.70), between University of Pisa, Italy (return phase, Prof. M. Luise) and Princeton University, NJ, USA (outgoing phase, Prof. H.V. Poor)
- November 2008 – June 2010,
May 2011 – December 2012,
July 2024 – January 2025 **Consultant engineer**
Wiser s.r.l.
Via Fiume, 23 – I-57123 Livorno, Italy
Task and workpackage leader for European research projects (FP7 DAVINCI, funded by the European Commission, and DTA and JEANS, funded by the European Space Agency)
- July 2006 – January 2007 **Visiting student research collaborator**
Princeton University, Dept. Electrical Engineering
Olden St. – Princeton, NJ, 08544, United States
Scientific research (advisor: Prof. H.V. Poor)
- EDUCATION AND TRAINING**
- January 2005 – June 2008 **Doctor of Philosophy in Information Engineering**
University of Pisa, Dept. Information Engineering
Via Caruso, 16 – I-56122 Pisa, Italy
Principal subjects: satellite communication systems, satellite positioning systems, wireless communication networks, digital signal processing
- November 2004 – February 2005 **Qualification to the profession of Engineer**
University of Pisa
Lungarno Pacinotti, 43 – I-56126 Pisa, Italy
- October 2002 – October 2004 **Master degree in Telecommunication Engineering**
University of Pisa, School of Engineering
Via Diotallevi, 2 – I-56122 Pisa, Italy
Principal subjects: telecommunication systems, digital communications, vehicular technology, telematics, antenna propagation
- September 1999 – October 2002 **Bachelor degree in Telecommunication Engineering**
University of Pisa, School of Engineering
Via Diotallevi, 2 – I-56122 Pisa, Italy

Principal subjects: mathematics, physics, numerical analysis, computer science, electromagnetics, communication networks, signal theory

September 1994 – July 1999 Scientific secondary school certificate (maturità scientifica)

Liceo scientifico E. Fermi
Via Ambrogi – I-57023, Cecina (LI), Italy

Principal subjects: mathematics, physics, Italian language, philosophy, Latin language, English language

AWARDS

- FP7 Marie Curie International Outgoing Fellowships for career development (IOF) 2011, Grant Agreement no. PEOF-GA-2011-302520 GRAND-CRU “Game-theoretic Resource Allocation for wireless Networks based on Distributed and Cooperative Relaying Units”, April 2012 - March 2014 (Total EC contribution: EUR 178,760.70), between University of Pisa, Italy (return phase, Prof. M. Luise) and Princeton University, NJ, USA (outgoing phase, Prof. H.V. Poor)
- Senior Member of the Institute of Electrical and Electronics Engineers (IEEE) (Feb. 2024)
- Senior Member of the Intl. Union of Radio Science (URSI) (July 2023)
- Exemplary Reviewer 2012 for *IEEE Wireless Communications Letters* (D.I. Kim, “Status of the letters and exemplary reviewers,” *IEEE Wireless Commun. Lett.*, vol. 2, no. 1, p. 1, Feb. 2013)
- Exemplary Editor 2024 for *IEEE Communications Letters*
- 2014 URSI Young Scientist Award, presented at the XXXI General Assembly of the Intl. Union of Radio Science (URSI), Beijing, China, Aug. 2014
- Best paper award at the *IEEE Wireless Commun. & Networking Conf. (WCNC)*, Shanghai, China, Apr. 2013 (“IEEE WCNC 2013 completes latest international event in Shanghai, China,” *IEEE Commun. Mag.*, vol. 51, no. 7, p. 14-15, July 2013)
- Best student paper award at the *Intl. Waveform Diversity and Design Conference (WDD)*, Pisa, Italy, June 2007
- Best innovation paper award at the *Wireless Innovation Forum European Conf. Commun. Technol. and Software Defined Radio*, Rome, Italy, Nov. 2014.
- Best paper award of the Plenary Session “Applications and Tools - part 2” at the *ESA Workshop on EGNOS Performance and Applications*, Gdynia, Poland, Oct. 2005
- Teacher of the academic year 2023/2024, presented by the School of Engineering, University of Pisa, Italy
- Premio Galileo Giovani 2015, presented by Fondazione Premio Internazionale Galileo Galilei, Rotary Club (Italy Section)
- Three-year (2005-2007) grant issued by the Italian Ministry of Education for the Ph.D. program
- Two-year (2003-2004) grant issued by the Tuscany Region for the M.Eng. program
- Three-year (2000-2002) grant issued by the Tuscany Region for the B.Eng. program

PROFESSIONAL SERVICES

Editorial board

- Associate Editor for the journal *EURASIP Journal on Advances in Signal Processing* (since April 2021)
- Associate Editor for the journal *IEEE Communications Letters* (since January 2023)
- Lead Guest Editor for the special issue “Advanced Signal Processing for Sustainable and Low Footprint Wireless Communications” on the journal *EURASIP Journal on Advances in Signal Processing* (January-December 2024)
- Member of the evaluation committee for the 2023 best paper award for the journal *EURASIP Journal on Advances in Signal Processing* (March 2024)

Conference organization

- Publication chair for the 5th International ICST Conference on Performance Evaluation Methodologies and Tools (VALUETOOLS), Paris, France, May 2011
- Publicity co-chair for the 6th International Conference on Network Games, Control and Optimization (NETGCOOP), Avignon, France, Nov. 2012
- Exhibition co-chair for the 39th International Conference on Acoustics, Speech and Signal Processing (ICASSP), Florence, Italy, May 2014
- Exhibition chair for the IEEE International Conference on Communications (ICC), Rome, Italy, May-June 2023

- Conference organization**
- Finance chair for the IEEE Intl. Workshop on Signal Processing Advances for Wireless Communications (SPAWC), Lucca, Italy, Sept. 2024
 - Publication co-chair for the European Signal Processing Conference (EUSIPCO), Palermo, Italy, Sept. 2025
 - TCP co-Chair for the IEEE International Conference on Machine Learning for Communication and Networking (ICMLCN), Abu Dhabi, United Arab Emirates, April 2026
- TPC membership**
- IEEE Intl. Conf. Ultra Wideband (ICUWB) 2011 (Bologna, Italy, Sept. 2011)
 - IEEE Intl. Conf. Commun. (ICC) 2012 (Ottawa, Canada, June 2012)
 - IEEE Intl. Conf. Commun. China (ICCC) 2012 (Beijing, China, Aug. 2012)
 - Intl. Conf. Network Games, Control and Optimization (NetGCoop) 2012 (Avignon, France, Nov. 2012)
 - Intl. Conf. Connected Vehicles & Expo (ICCVE) 2012 (Beijing, China, Dec. 2012)
 - IEEE Symp. Computers & Informatics (ISCI) 2013 (Langkawi, Malaysia, Apr. 2013)
 - IEEE Intl. Conf. Commun. (ICC) 2013 (Budapest, Hungary, June 2013)
 - Intl. Wireless Summit (IWS) 2013 (New Brunswick, NJ, USA, June 2013)
 - Intl. Conf. Wireless Commun., Veh. Technol., Information Theory, and Aerospace & Electronic Systems (Wireless VITAE) 2013 (Princeton, NJ, USA, June 2013)
 - IEEE Intl. Conf. Green Computing and Commun. (GreenCom) 2013 (Beijing, China, Aug. 2013)
 - IEEE Intl. Conf. Ultra Wideband (ICUWB) 2013 (Sydney, Australia, Sept. 2013)
 - Intl. Conf. Connected Vehicles & Expo (ICCVE) 2013 (Las Vegas, NV, USA, Dec. 2013)
 - IEEE Global Telecommun. Conf. (GLOBECOM) 2013 (Atlanta, GA, USA, Dec. 2013)
 - IEEE Wireless Commun. Networking Conf. (WCNC) 2014 (Istanbul, Turkey, April 2014)
 - IEEE Symp. Computer Applications & Industrial Electronics (ISCAIE) 2014 (Penang, Malaysia, April 2014)
 - IEEE Intl. Conf. Computer Commun. (INFOCOM) 2014 (Toronto, Canada, Apr. 2014)
 - Intl. Workshop on Wireless Networks: Communication, Cooperation and Competition (WNC3) 2014 (Hammamet, Tunisia, May 2014)
 - European Wireless Conf. (EW) 2014 (Barcelona, Spain, May 2014)
 - IEEE Intl. Conf. Commun. (ICC) 2014 (Sydney, Australia, June 2014)
 - IEEE ICC 2014 Workshop on Small Cell and 5G Networks (Sydney, Australia, June 2014)
 - Intl Conf. Commun. and Networking in China (ChinaCom) 2014 (Maoming, China, Aug. 2014)
 - XXXI General Assembly of the Intl. Union of Radio Science (URSI) 2014 (Beijing, China, Aug. 2014)
 - IEEE Intl. Conf. Ultra Wideband (ICUWB) 2014 (Paris, France, Sept. 2014)
 - Intl. Symposium on Wireless Personal Multimedia Communication (WPMC) 2014 (Sydney, Australia, Sept. 2014)
 - Advanced Satellite Multimedia Systems (ASMS) Conference 2014 (Livorno, Italy, Sept. 2014)
 - Intl. Conf. Network Games, Control and Optimization (NetGCoop) 2014 (Trento, Italy, Oct. 2014)
 - IEEE Intl. Conf. Commun. China (ICCC) 2014 (Shanghai, China, Oct. 2014)
 - Intl. Conf. Connected Vehicles & Expo (ICCVE) 2014 (Vienna, Austria, Nov. 2014)
 - IEEE Global Telecommun. Conf. (GLOBECOM) 2014 (Austin, TX, USA, Dec. 2014)
 - IEEE Global Conf. Signal and Information Process. (GlobalSIP) 2014 – Game theory for signal processing and communications (Atlanta, GA, USA, Dec. 2014)
 - Intl. Conf. Performance Evaluation Methodologies and Tools (VALUETOOLS) (Bratislava, Slovakia, Dec. 2014)
 - IEEE Wireless Commun. Networking Conf. (WCNC) 2015 (New Orleans, LA, USA, Mar. 2015)
 - IEEE Intl. Conf. Commun. (ICC) 2015 (London, UK, June 2015)
 - European Conf. Networks and Commun. (EuCNC) 2015 (Paris, France, June/July 2015)
 - Intl. Symp. Wireless Communication Systems (ISWCS) 2015 (Brussels, Belgium, Aug. 2015)
 - IEEE Veh. Technol. Conf. - Fall (VTC-Fall) 2015 (Boston, MA, USA, Sept. 2015)
 - IEEE Intl. Conf. Ubiquitous Wireless Broadband (ICUWB) 2015 (Montreal, Canada, Oct. 2015)
 - Intl. Conf. Connected Vehicles & Expo (ICCVE) 2015 (Shenzhen, China, Oct. 2015)
 - IEEE Global Telecommun. Conf. (GLOBECOM) 2015 (San Diego, CA, USA, Dec. 2015)
 - Intl. Conf. Performance Evaluation Methodologies and Tools (VALUETOOLS) (Berlin, Germany, Dec. 2015)
 - IEEE Intl. Workshop Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP) (Cancun, Mexico, Dec. 2015)
 - IEEE Wireless Commun. Networking Conf. (WCNC) 2016 (Doha, Qatar, April 2016)
 - IEEE Intl. Conf. Commun. (ICC) 2016 (Kuala Lumpur, Malaysia, May 2016)
 - Intl. Symp. Wireless Communication Systems (ISWCS) 2016 (Poznań, Poland, Sep. 2016)
 - IEEE Global Telecommun. Conf. (GLOBECOM) 2016 (Washington, DC, USA, Dec. 2016)
 - IEEE Intl. Conf. Commun. (ICC) 2017 (Paris, France, May 2017)
 - Intl. Symp. Wireless Communication Systems (ISWCS) 2018 (Lisbon, Portugal, Aug. 2018)
 - IEEE Intl. Workshop on Signal Processing Advances for Wireless Communications (SPAWC) 2021 (Lucca, Italy, Sept. 2021)
 - IEEE Wireless Commun. Networking Conf. (WCNC) 2022 (Austin, TX, USA, April 2022)
 - IEEE Intl. Workshop on Signal Processing Advances for Wireless Communications (SPAWC) 2022 (Oulu, Finland, July 2022)
 - IEEE Intl. Workshop on Resource Allocation and Cooperation in Wireless Networks (RAWNET) 2022 (Turin, Italy, Sept. 2022)
 - IEEE Wireless Commun. Networking Conf. (WCNC) 2023 (Glasgow, UK, March 2023)

- TPC membership**
- IEEE Intl. Conf. Acoustics, Speech, and Signal Process. (ICASSP) 2023 (Rhodes Island, Greece, June 2023)
 - IEEE Intl. Symp. Personal, Indoor and Mobile Radio Commun. (PIMRC) 2023 (Toronto, Canada, Sept. 2023)
 - IEEE Global Telecommun. Conf. (GLOBECOM) 2023 (Kuala Lumpur, Malaysia, Dec. 2023)
 - Intl. Conf. Future Communications and Networks (FCN) 2023 (Queenstown, New Zealand, Dec. 2023)
 - IEEE Wireless Commun. Networking Conf. (WCNC) 2024 (Dubai, United Arab Emirates, April 2024)
 - IEEE Veh. Technol. Conf. - Spring (VTC-Spring) 2024, (Singapore, Singapore, April 2024)
 - Intl. Symp. Wireless Communication Systems (ISWCS) 2024 (Rio de Janeiro, Brazil, July 2024)
 - IEEE Intl. Workshop on Signal Processing Advances for Wireless Communications (SPAWC) 2024 (Lucca, Italy, Sept. 2024)
 - IEEE Intl. Symp. Personal, Indoor and Mobile Radio Commun. (PIMRC) 2024 (Valencia, Spain, Sept. 2024)
 - Intl. Conf. Computing, Networking and Communications (ICNC) 2025 (Honolulu, HI, USA, Feb. 2025)
 - IEEE Wireless Commun. Networking Conf. (WCNC) 2025 (Milan, Italy, Mar. 2025)
 - IEEE Intl. Workshop on Signal Processing and Artificial Intelligence for Wireless Communications (SPAWC) 2025 (Surrey, United Kingdom, July 2025)
 - IEEE Intl. Symp. Personal, Indoor and Mobile Radio Commun. (PIMRC) 2025 (Istanbul, Turkey, Sept. 2025)
 - IEEE Wireless Commun. Networking Conf. (WCNC) 2026 (Kuala Lumpur, Malaysia, Apr. 2026)
 - IEEE Intl. Conf. Commun. (ICC) 2026 (Glasgow, United Kingdom, May 2026)

- Conference & school organization**
- Co-organizer (with E. Jorswieck, Dresden University of Technology, Germany) of the special session “Game theory and Resource Sharing in Wireless Communications”, at the European Wireless Conference, Lucca, Italy, Apr. 2010
 - Co-organizer of the “Newcom++ Spring School 2010 on Cognitive Wireless Communication Networks,” Lucca, Italy, May 2010
 - Co-organizer (with M. Luise and L. Sanguinetti, University of Pisa, Italy) of the special session “Advances in Game-theoretic Tools for Wireless Communications,” at the European Signal Processing Conference (EUSIPCO), Aalborg, Denmark, Aug. 2010
 - Co-organizer of “New trends in Telecommunications: Joint workshop Fitce Greece - AICT Fitce Italy,” Pisa, Italy, April 2011
 - Co-organizer (with T. Bräysy, University of Oulu, Finland) of the special session “Cognitive radio in public safety communications”, at the Intern. Conf. Cognitive Radio Oriented Wireless Networks and Communications (CROWNCOM), Osaka, Japan, June 2011
 - Co-organizer (with M. Luise, University of Pisa, Italy) of the special session “Game theory in Communications,” at the Asilomar Conf. on Signals, Systems, and Computers, Pacific Grove, CA, USA, Nov. 2012
 - Co-organizer of the “Newcom# Spring School 2014 on Advanced Signal Processing Techniques for Heterogeneous Networks,” Pisa, Italy, March 2014
 - Co-organizer (with A. Burr, University of York, United Kingdom) of the special session “Cooperative Communications and Network Coding in Next-Generation Wireless Networks,” at the XXXI General Assembly of the Intl. Union of Radio Science (URSI), Beijing, China, Aug. 2014
 - Moderator of the industry panel “Trustworthy 6G Networking,” at the IEEE International Conference on Communications (ICC), Rome, Italy, May-June 2023
 - Co-organizer (with A. Michel, University of Pisa, Italy) of the special session “Integrated communications, sensing and computing for beyond-5G communications,” at the XXXV General Assembly of the Intl. Union of Radio Science (URSI), Sapporo, Japan, Aug. 2023
 - Organizer and moderator of the industry panel “Key challenges for high-performance 6G communications in smart environments,” at the IEEE International Conference on Communications (ICC), Denver, CO, USA, June 2024
 - Co-organizer (with A. Tarable, National Research Council, Italy) of the special session “Non-terrestrial networks,” at the URSI Asia-Pacific Radio Science Conference, Sidney, Australia, Aug. 2025
 - Co-organizer (with A. Tarable, National Research Council, Italy) of the special session “Non-terrestrial networks,” at the XXXVI General Assembly of the Intl. Union of Radio Science (URSI), Kraków, Poland, Aug. 2026

- Management board**
- Student representative of the PhD School in Engineering “Leonardo da Vinci”, Pisa, Italy, for the period 2005-2007

PERSONAL SKILLS

Mother tongue Italian

Other languages	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C2	C1	C2	C2
French	A2	B1	A2	A2	A2
German	A1	A1	A1	A1	A1

Levels: A1 and A2: Basic user – B1 and B2: Independent user – C1 and C2: Proficient user
[Common European Framework of Reference for Languages](#)

Social skills and competences	Team spirit, gained through project activities and production-grade activities, by leading an R&D team of around 18 people, and as a thesis supervisor for Ph.D., M. Eng., and B. Eng. students
Organizational skills and competences	Good experience in product and project management in scientific aspects, economic aspects, proposal phase and project management
Technical skills and competences	Good knowledge of technical issues in telecommunication systems, at both high- and low-level aspects
Computer skills and competences	Knowledge of MS Windows, Mac OS X, and Linux operating systems; knowledge of C and Matlab programming languages; knowledge of MS Office, LibreOffice, Mathematica, and T _E X and L ^A T _E X compilers; experience with HTML, C++, Assembler, and Python programming languages.

PUBLICATIONS

Books

- B1. M. Luise, G.M. Vitetta, with G. Bacci, F. Zuccardi Merli, *Teoria dei segnali* (in Italian), 3rd ed. Milan, Italy: McGrawHill, 2009.
- B2. M. Luise, G.M. Vitetta, G. Bacci, with P. Di Viesti, *Teoria dei segnali* (in Italian), 4th ed. Milan, Italy: McGrawHill, 2025 (in Italian).

Book chapters

- BC1. F. Zanier, G. Bacci, and M. Luise, "Non-binary spread spectrum signals with good delay-tracking features for satellite positioning," in *Principles of Waveform Diversity and Design*, M. Wicks, E. Mokole, S. Blunt, R. Schneible, and V. Amuso, Eds. Raleigh, NC: SciTech Publishing, 2010.
- BC2. G. Bacci, *et al.*, "Satellite-based navigation systems," in *Satellite and Terrestrial Radio Positioning Techniques*, D. Dardari, E. Falletti, and M. Luise, Eds. Oxford, U.K.: Academic Press, 2012.
- BC3. G. Bacci, *et al.*, "Fundamental limits in the accuracy of wireless positioning," in *Satellite and Terrestrial Radio Positioning Techniques*, D. Dardari, E. Falletti, and M. Luise, Eds. Oxford, U.K.: Academic Press, 2012.
- BC4. G. Bacci and M. Luise, "How to use a strategic game to optimize the performance of CDMA wireless network synchronization," in *Mechanisms and Games for Dynamic Spectrum Allocation*, T. Alpcan, H. Boche, M.L. Honig, and H.V. Poor, Eds. Cambridge, U.K.: Cambridge Univ. Press, 2013.

Journal papers

- J1. G. Bacci, M. Luise, H.V. Poor, and A.M. Tulino, "Energy-efficient power control in impulse radio UWB wireless networks," *IEEE J. Sel. Topics Signal Process.*, vol. 1, no. 3, pp. 508-520, Oct. 2007.
- J2. G. Bacci, M. Luise, and H.V. Poor, "Game theory and power control in ultrawideband networks," *Physical Communication*, vol. 1, no. 1, pp. 21-39, Mar. 2008.
- J3. G. Bacci, M. Luise, and H.V. Poor, "Energy-efficient power control is (almost) equivalent for DS-SS and TH-UWB," *IEE Electronics Letters*, vol. 44, no. 8, pp. 555-557, 10th Apr. 2008.

Journal papers

- J4. G. Bacci, M. Luise, and H.V. Poor, "Performance of rake receivers in IR UWB networks using energy-efficient power control," *IEEE Trans. Wireless Commun.*, vol. 7, no. 6, pp. 2289-2299, June 2008.
- J5. F. Zanier, G. Bacci, and M. Luise, "Criteria to improve time-delay estimation of spread spectrum signals in satellite positioning," *IEEE J. Sel. Topics Signal Process.*, vol. 3, no. 5, pp. 748-763, Oct. 2009.
- J6. G. Bacci and M. Luise, "Game theory in wireless communications with an application to signal synchronization," *Advances in Electronics and Telecommunications*, vol. 1, no. 1, pp. 86-97, Apr. 2010.
- J7. G. Bacci, M. Della Maggiora, and M. Luise, "Iterative channel estimation for non-binary LDPC-coded OFDM signals," *ISRN Signal Processing*, vol. 2011, article ID 254597, 8 pages, 2011.
- J8. F. Principe, G. Bacci, F. Giannetti, and M. Luise, "Software-defined radio technologies for GNSS receivers: A tutorial approach to a simple design and implementation," *Intl. J. Navigation and Observation*, vol. 2011, Article ID 979815, 27 pages, 2011.
- J9. F. Shams, G. Bacci, and M. Luise, "An OFDMA resource allocation algorithm based on coalitional games," *EURASIP J. Wireless Communications and Networking*, vol. 2011, no. 1, 2011:46, July 2011.
- J10. G. Bacci and M. Luise, "A game-theoretic perspective on code synchronization for CDMA wireless systems," *IEEE J. Sel. Areas Commun.*, vol. 30, no. 1, pp. 107-118, Jan. 2012.
- J11. G. Bacci, "Energy-efficient power control for CDMA code acquisition over frequency-selective channels," *IEEE Commun. Lett.*, vol. 16, no. 3, pp. 364-367, Mar. 2012.
- J12. G. Bacci and M. Luise, "A pre-Bayesian game for CDMA power control during network association," *IEEE J. Sel. Topics Signal Process.*, vol. 6, no. 2, pp. 76-88, Apr. 2012.
- J13. G. Bacci, L. Sanguinetti, M. Luise, and H.V. Poor, "A game-theoretic approach for energy-efficient contention-based synchronization in OFDMA systems," *IEEE Trans. Signal Process.*, vol. 61, no. 5, pp. 1258-1271, Mar. 2013.
- J14. G. Bacci and M. Luise, "QoS-aware game-theoretic rate & power control for CDMA wireless communication networks," *Computer Networks*, vol. 57, no. 8, pp. 1789-1804, June 2013.
- J15. G. Bacci, L. Sanguinetti, M. Luise, and H.V. Poor, "Energy-efficient power control for contention-based synchronization in OFDMA systems with discrete powers and limited feedback," *EURASIP J. Wireless Communications and Networking*, vol. 2013, no. 1, 2013:192, July 2013.
- J16. G. Bacci, "Improving the energy efficiency of CDMA power control over frequency-selective channels," *IEEE Wireless Commun. Lett.*, vol. 2, no. 4, pp. 431-434, Aug. 2013.
- J17. F. Shams, G. Bacci, and M. Luise, "A survey on resource allocation techniques in OFDM(A) networks," *Computer Networks*, vol. 65, no. 2, pp. 129-150, June 2014.
- J18. F. Shams, G. Bacci, and M. Luise, "Energy-efficient power control for multiple-relay cooperative networks using Q -learning," *IEEE Trans. Wireless Commun.*, vol. 14, no. 3, pp. 1567-1580, Mar. 2015.
- J19. G. Bacci, L. Sanguinetti, and M. Luise, "Understanding game theory via wireless power control," *IEEE Signal Process. Mag.*, vol. 32, no. 4, pp. 132-137, July 2015.
- J20. G. Bacci, E.V. Belmega, P. Mertikopoulos, and L. Sanguinetti, "Energy-aware competitive power allocation for heterogeneous networks under QoS constraints," *IEEE Trans. Wireless Commun.*, vol. 14, no. 9, pp. 4728-4742, Sep. 2015.
- J21. I. Stupia, L. Sanguinetti, G. Bacci, and L. Vandendorpe, "Power control in networks with heterogeneous users: A quasi-variational inequality approach," *IEEE Trans. Signal Process.*, vol. 63, no. 21, pp. 5691-5705, Nov. 2015.

Journal papers

- J22. G. Bacci, S. Lasaulce, W. Saad, and L. Sanguinetti, "Game theory for networks: A tutorial on game-theoretic tools for emerging signal processing applications," *IEEE Signal Process. Mag.*, vol. 33, no. 1, pp. 94-119, Jan. 2016.
- J23. F. Arreghini, C. Vitiello, M. Luise, A. Manco, G. Bacci, and M. Falzarano, "An approach to T&E of military SDR platforms and waveforms: The LANCERS lab," *J. Signal Process. Systems*, vol. 83, no. 1, pp. 93-111, Apr. 2016.
- J24. A. Zappone, L. Sanguinetti, G. Bacci, E. Jorswieck, and M. Debbah, "Energy-efficient power control: A look at 5G wireless technologies," *IEEE Trans. Signal Process.*, vol. 64, no. 7, pp. 1668-1683, Apr. 2016.
- J25. A. Grassi, G. Piro, G. Bacci, and G. Boggia, "Uplink resource management in 5G: When a distributed and energy-efficient solution meets power and QoS constraints," *IEEE Trans. Veh. Technol.*, vol. 66, no. 6, pp. 5176-5189, June 2017.
- J26. F. Giannetti, R. Reggiannini, M. Moretti, E. Adirosi, L. Baldini, L. Facheris, A. Antonini, S. Melani, G. Bacci, A. Petrolino, and A. Vaccaro, "Real-time rain rate evaluation via satellite downlink signal attenuation measurement," *Sensors*, vol. 17, article ID 1864, 24 pages, Aug. 2017.
- J27. E. Adirosi, L. Facheris, F. Giannetti, S. Scarfone, G. Bacci, A. Mazza, A. Ortolani, and L. Baldini, "Evaluation of rainfall estimation derived from commercial interactive DVB receivers using disdrometer, rain gauge, and weather radar," *IEEE Trans. Geosci. Remote Sens.*, vol. 59, no. 11, pp. 8978-8991, Nov. 2021.
- J28. F. Sapienza, G. Bacci, F. Giannetti, V. Lottici, A. Vaccaro, G. Serafino, A. Ortolani, F. Caparrini, A. Antonini, S. Melani, A. Mazza, L. Baldini, E. Adirosi, L. Facheris, "A feasibility study on opportunistic rainfall measurement from satellite TV broadcasts," *URSI Radio Science Letters*, vol. 4, 2022.
- J29. G. Bacci, L. Sanguinetti, E. Björnson, "Spherical wavefronts improve MU-MIMO spectral efficiency when using electrically large arrays," *IEEE Wireless Commun. Letters*, vol. 12, no. 17, pp. 1219-1223, July 2023.
- J30. G. Bacci, R. de Gaudenzi, M. Luise, L. Sanguinetti, and E. Sebastiani, "Formation-of-arrays antenna technology for high-throughput mobile non-terrestrial networks," *IEEE Trans. Aerospace and Electronic Systems*, vol. 59, no. 5, pp. 4919-4935, Oct. 2023.
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- C41. C. Vitiello, G. Bacci, F. Arreghini, and M. Luise, "Low-cost fully-software waveforms for tactical communications," in *Proc. Wireless Innovation Forum European Conf. Commun. Technol. and Software Defined Radio*, Rome, Italy, Nov. 2014.
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- C67. E. Sebastiani, G. Bacci, P. Angeletti, M. Luise, and R. De Gaudenzi, "Configuring a large formation of communication satellites for optimal electrical power generation and antenna beamforming," in *Proc. URSI Atlantic Radio Science Meeting*, Gran Canaria, Spain, May 2024 (invited paper).
- C68. F. Sapienza, F. Giannetti, G. Bacci, A. Vaccaro, N. Davini, E. Adirosi, S. Angeloni, L. Baldini, S. Melani, and A. Ortolani, "Performance comparison of different types of broadcast satellite receivers for opportunistic rain estimation," in *Proc. URSI Atlantic Radio Science Meeting*, Gran Canaria, Spain, May 2024.
- C69. G. Scognamiglio, A. Rucci, A. Vaccaro, G. Serafino, F. Sapienza, F. Giannetti, G. Bacci, V. Lottici, E. Adirosi, S. Angeloni, L. Baldini, S. Melani, and A. Ortolani, "Rainfall estimation by opportunistic use of communications satellite signals: Facts and myths revealed," in *Proc. URSI Atlantic Radio Science Meeting*, Gran Canaria, Spain, May 2024 (invited paper).
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- C71. G. Bacci, O. M. Picchi, M. Luise, C. Casali, and M. Andrenacci, "Vulnerability of 3GPP's NB-IoT standard in the presence of jamming: The satellite scenario," in *Proc. IEEE Intl. Workshop on Signal Processing Advances for Wireless Communications (SPAWC)*, Lucca, Italy, Sept. 2024.
- C72. G. Bacci, R. De Gaudenzi, M. Luise, and L. Sanguinetti, "Satellite FoA-based mega-antenna for user-centric mobile communications: Performance evaluation," in *Proc. IEEE Intl. Workshop on Signal Processing Advances for Wireless Communications (SPAWC)*, Lucca, Italy, Sept. 2024.

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- C75. F. Sapienza, F. Giannetti, G. Manara, G. Bacci, and A. Vaccaro, “The potential of opportunistic rainfall sensing to complement conventional sensors: The 2017 flash flood in Leghorn (Italy) as a case study,” in *Proc. URSI Pacific Radio Science Meeting*, Sydney, Australia, Aug. 2025.
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- C77. G. Bacci, G. Galgani, R. Guidi, M. Luise, L. Sanguinetti, and V. Pellegrini, “Directional modulation: Advancing electromagnetic signal processing for secure communications,” in *Proc. Asilomar Conf. Signals, Systems, and Computers*, Pacific Grove, CA, United States, Oct. 2025.
- C78. M. Gemignani, S. Marcuccio, M. Andrenacci, G. Bacci, *et al.*, “Development of the EXCITE IOD/IOV mission,” in *Proc. CEAS Aerospace Europe Conf.*, Turin, Italy, Dec. 2025.

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- N2. Ł. Januszkiewicz, H. Gierszal, W. Hołubowicz, and G. Bacci, “Algorytm turboestymacji kanału dla systemów OFDM z wykorzystaniem niebinarnych kodów LDPC” (Turbo channel estimation algorithms for OFDM systems using nonbinary LDPC codes), *Krajowa Konferencja Radiokomunikacji, Radiofonii i Telewizji*, Kraków, Poland, June 2010 (in Polish).
- N3. G. Bacci and M. Luise, “Energy-efficient CDMA power control for wireless networks based on a pre-Bayesian game,” *Riunione Annuale GTTI*, Taormina, Italy, June 2011.
- N4. G. Bacci, “Nefocast: Uso di ricevitori satellitari come sensori di pioggia,” in *Atti XV Forum Italradio*, Coltano, Italy, Dec. 2018 (in Italian).

Invited talks

- IT1. G. Bacci, M. Luise, and H.V. Poor, “Game-theoretic analysis of energy efficiency in multiuser impulse radio systems,” *IEEE Communication Theory Workshop (CTW)*, Sedona, AZ, United States, May 2007 (given by H.V. Poor).
- IT2. G. Bacci, M. Luise, and H.V. Poor, “Game theory and resource allocation in wireless communications,” in *Proc. Joint Workshop on Coding and Communications (JWCC)*, Dürnstein, Austria, Oct. 2007 (given by M. Luise).
- IT3. G. Bacci, “Basics of noncooperative game theory,” Department of Information Engineering, University of Pisa, Pisa, Italy, Nov. 2009.
- IT4. G. Bacci, “An energy-efficient perspective on contention-based synchronization for 3G and 4G communications and sensor networks,” Department of Electrical Engineering, University of California at Los Angeles (UCLA), Los Angeles, CA, Aug. 2012.
- IT5. G. Bacci, “An energy-efficient perspective on contention-based synchronization for 3G and 4G communications and sensor networks,” Department of Electrical Engineering, Columbia University, New York, NY, Sept. 2012.

Invited talks

- IT6. G. Bacci, "An energy-efficient perspective on contention-based synchronization for 3G and 4G communications and sensor networks," *Mini-Symposium on the Next-Generation Cellular Networks - Hyper-Cellular Architecture and Resource-Optimized Service*, Shanghai, China, Apr. 2013.
- IT7. G. Bacci, "An energy-efficient perspective on contention-based synchronization for 3G and 4G communications and sensor networks," Alcatel-Lucent Chair on Flexible Radio, Ecole supérieure d'électricité (Supélec), Gif-sur-Yvette, France, July 2013.
- IT8. G. Bacci and L. Sanguinetti, "Marie Curie Actions 2013 – How to write a successful proposal," Alcatel-Lucent Chair on Flexible Radio, Ecole supérieure d'électricité (Supélec), Gif-sur-Yvette, France, July 2013.
- IT9. G. Bacci, "An energy-efficient perspective on contention-based synchronization for 3G and 4G communications," *Workshop on Algorithmic Game Theory: Learning Algorithms and Dynamics in Distributed Systems*, Saint Nizier du Moucherotte, France, July 2013.
- IT10. G. Bacci, "Uso di ricevitori satellitari come sensori di pioggia," *Toscana Tech*, Florence, Italy, Nov. 2018 (in Italian).
- IT11. G. Bacci, *La ricerca va in scena – Le ragioni dell'investimento pubblico in R&S*, Florence, Italy, Dec. 2019 (in Italian).
- IT12. G. Bacci, "The technological challenge of integrating satellites into (B)5G networks," Technical University of Eindhoven, Eindhoven, The Netherlands, Oct. 2022.
- IT13. G. Bacci, L. Sanguinetti, "What is the impact of a wrong channel model to evaluate the performance with spherical waveforms?," *Abu Dhabi 6G Summit*, Abu Dhabi, United Arab Emirates, Nov. 2022 (given by L. Sanguinetti).
- IT14. G. Bacci, "The technological challenge of integrating satellites into (B)5G networks," *Space: Research on space technologies*, Italian National Research Council (CNR), Rome, Italy, May 2023.
- IT15. G. Bacci, "Changing the scenario does change the performance: The examples of holographic MIMO and multiuser MIMO at sub-THz frequencies," Laboratoire d'Informatique Gaspard-Monge, Université Gustave Eiffel, Paris, France, Nov. 2023.
- IT16. G. Bacci, R. De Gaudenzi, M. Luise, L. Sanguinetti, S. Morosi, "Mega-antennas as a key enabler for terrestrial and non-terrestrial communication network integration," *RESTART Plenary Dissemination Workshop*, Palermo, Italy, Jan. 2025 (poster session).

Tutorials & seminars

- T1. M. Luise and G. Bacci, "Game theory and resource allocation in wireless communications," *IEEE Wireless Commun. & Networking Conf. (WCNC)*, Budapest, Hungary, Apr. 2009 (3 hours).
- T2. M. Luise and G. Bacci, "Game theory and resource allocation in wireless communications," *IEEE Intl. Conf. Acoustics, Speech, and Signal Process. (ICASSP)*, Taipei, Taiwan, Apr. 2009 (3 hours).
- T3. G. Bacci, L. Sanguinetti, "Basics of noncooperative game theory and its applications to information engineering," Dept. Information Engineering, University of Pisa, Pisa, Italy, Apr.-May 2010 (16 hours).
- T4. G. Bacci, L. Sanguinetti, "Basics of noncooperative game theory and its applications to wireless communications," Dept. Information Engineering, University of Pisa, Pisa, Italy, Apr. 2011 (20 hours).
- T5. L. Sanguinetti and G. Bacci, "Game-theoretic techniques for the energy efficiency of wireless communications and sensor networks," *IEEE Wireless Commun. & Networking Conf. (WCNC)*, Shanghai, China, Apr. 2013 (3 hours).

Tutorials & seminars

- T6. M. Luise and G. Bacci, "Game theory for wireless communications and sensor networks," *IEEE Intl. Workshop on Signal Processing Advances for Wireless Communications (SPAWC)*, Darmstadt, Germany, June 2013 (3 hours).
- T7. G. Bacci, "Game theory for resource allocation and network design," *European Signal Process. Conf (EUSIPCO)*, Marrakech, Morocco, Sept. 2013 (3 hours).
- T8. G. Bacci and L. Sanguinetti, "Game theory for wireless communications: Fundamentals and applications," Dept. Signals and Systems, Chalmers University of Technology, Göteborg, Sweden, Sept.-Oct. 2013 (14 hours).
- T9. L. Sanguinetti and G. Bacci, "Game theory for wireless communications: Fundamentals and applications," Inst. Information and Commun. Technologies, Electronics and Applied Mathematics, Univ. Catholique de Louvain, Louvain-la-Neuve, Belgium, Oct. 2013 (8 hours).
- T10. G. Bacci and M. Luise, "Introduction to game theory with applications to wireless communications and sensor networks," Dept. Computer Science, Universität Basel, Basel, Switzerland, Feb. 2014 (15 hours).
- T11. G. Bacci, "Game theory modeling and analysis of wireless networks," CrossFire Summer School, Barcelona, Spain, Jul. 2014 (3 hours).
- T12. G. Bacci, "PHY-layer technologies for 5G," 5G Summer School, Pisa, Italy, Jul. 2023 (2 hours).
- T13. G. Bacci, F. Sapienza, and F. Giannetti, "Opportunistic use of microwave satellite signals for early flooding detection and real-time rainfall field reconstruction," *URSI General Assembly & Scientific Symposium*, Sapporo, Japan, Aug. 2023 (0.5 hours).
- T14. G. Bacci, "PHY-layer technologies for 5G," 5G Summer School, Pisa, Italy, Jul. 2024 (2 hours).
- T15. G. Bacci, "Wireless communication systems and technologies: From the basics to 5G standards," Summer School on Microwaves and mm-waves for the design of advanced wireless links, Pisa, Italy, Jul. 2024 (3 hours).
- T16. G. Bacci, L. Sanguinetti, "Next-generation MIMO communications," *Intl. Symposium on Wireless Communication Systems (ISWCS)*, Rio de Janeiro, Brazil, Jul. 2024 (3 hours).
- T17. G. Bacci, "Wireless communication systems and technologies: From the basics to 5G standards," Summer School on Microwaves and mm-waves for the design of advanced wireless links, Pisa, Italy, June 2025 (2 hours).
- T18. G. Bacci, "PHY-layer technologies for B5G," B5G Summer School, Pisa, Italy, June 2025 (2 hours).

Other publications

- O1. G. Bacci, "Tecniche di progetto di filtri FIR digitali con il criterio equiripple" (FIR filter design following the equiripple criterion), B.Eng. dissertation, University of Pisa, Pisa, Italy, Oct. 2002 (in Italian).
- O2. G. Bacci, "Algoritmi di calcolo della posizione dell'utente in ricevitori satellitari GPS" (Computing user position in GPS receivers), M.Eng. dissertation, University of Pisa, Pisa, Italy, Oct. 2004 (in Italian).
- O3. G. Bacci, L. Giugno, M. Luise, *Le reti radio cellulari* (in Italian). Pisa, Italy: Servizio Editoriale Universitario (SEU), 2007.
- O4. G. Bacci, "Distributed power control techniques based on game theory for wideband wireless networks," Ph.D. dissertation, University of Pisa, Pisa, Italy, Apr. 2008.