

Maria Luisa Merani

Curriculum vitæ

I received both the M.Sc. (summa cum laude) and the Ph.D. in electrical engineering from the University of Bologna, Italy. In 1991, I spent one year at the Computer Science Department of the University of California in Los Angeles. Since 1993, I am a faculty member of the Engineering Department “Enzo Ferrari” at the University of Modena and Reggio Emilia (UniMORE), Italy, where I am an associate professor in telecommunications. During my academic career I have successfully tutored dozens of students for their master’s degree thesis, as well as four PhDs. On October 2023, one of them won the national academic award for the best doctoral thesis in communications. Currently, I am tutoring two PhD students.

At present, I am involved in research on Internet of Vehicles (IoV), with emphasis on the safety of vulnerable road users, as well as on the adoption of machine learning in the field of vehicular communications. In the past, I worked on Non-Orthogonal Multiple Access (NOMA) techniques, peer-to-peer architectures for video streaming, and cellular mobile radio systems. On a national basis, I am the representative of the research unit of UniMORE inside CNIT, the Italian National Inter-University Consortium for Telecommunications.

I served as the technical program co-chair for the 2nd IEEE International Symposium on Wireless Communication Systems (ISWCS) 2005 and for IEEE Globecom, 2007 and 2009 editions. In 2010, I was the general chair of the sixth IEEE International Wireless Pervasive Computing Conference (ISWPC). In October 2009, Cambridge University Press published my textbook “Hands on networking: from theory to practice”. In 2012, I coordinated the Erasmus+ Intensive Programme for PhD students “Multimedia and the Future Internet: Moving Social and Mobile”. In the same year, I won the 2012 edition of the BMW App Games with one of my students, Emanuel Mazzilli. I served as an associate editor in the editorial board of the IEEE Transactions on Wireless Communications over the years 2008-2014. In 2018, I coordinated the experimental project “Dynamic, Energy-AwaRe PaTh Selection in Hybrid Wireless SeTtings (DART-HIT)” and in 2020,

the experimental project “eXploiting multi-radio access Technologies for emeRgency communicAtions in vehiCulAr enviRonmentS (XTRA-CARS)”, both funded within the H2020 framework. In 2020, I was the co-winner with R. Amoroso and F. Esposito of the Best Poster Award at the International Conference on emerging Networking EXperiments and Technologies, ACM CoNext. In 2025, I will be the general co-chair of the IEEE Wireless Communications and Networking Conference (WCNC), one of the flagship conferences in the wireless field. I am an IEEE Senior Member.

1 Scientific Curriculum

Editor

- Associate Editor of the IEEE Transactions on Wireless Communications, February 2008 - February 2014.

Guest Editor

- Guest Editor of the special issue “Peer-to-Peer Systems for Video Delivery”, *Peer-to-Peer Networking And Applications* published by Springer, February 2008.

General Chair of International Conferences

2023 appointed *General Chair* of *IEEE WCNC*, Wireless Communications and Networking Conference, 2025 edition.

2010 *General Chair* of *IEEE ISWPC 2010*, International Symposium on Wireless Pervasive Computing, Modena, Italia, May 5-8 2010.

Technical Chair of International Conferences

2009 *Technical Program Co-Chair* of *IEEE Globecom 2009*, Wireless Networking Symposium, Honolulu, Hawai, USA, November 2009.

2007 *Technical Program Co-Chair* of *IEEE Globecom 2007*, 50-th Anniversary Edition, Wireless Communications Symposium, Washington D.C., USA, November 2007.

2005 *Technical Program Co-Chair* of *IEEE ISWCS 2005*, *International Symposium on Wireless Communication Systems*, Siena, Italia, September 2005.

2005 *Technical Program Co-Chair of IEEE ISWCS Workshop on Satellite and Space Communications*, Siena, Italia, September 2005.

Panel Chair at international conferences

2009 *Panel Chair at IEEE Globecom 2009: "Women in Communications Engineering: Career Opportunities in the Future Communications and Networking Environment"*, Honolulu, Hawaii, USA, December 2009.

2009 *Panel Organizer and Chair at IEEE ISWCS 2009, International Symposium on Wireless Communications and Systems: "The Future of Wireless Communications: Green and Cooperative Networking?"* Siena, Italia, September 2009.

Steering Committee Member

2009 Steering Committee member of *IEEE ISWPC 2010, International Symposium on Wireless Pervasive Computing*, Modena, Italia, May 2010.

2005 Steering Committee member of *IEEE ISWCS 2005, International Symposium on Wireless Communication Systems*, Siena, Italia.

Advisory Committee Member

2010 Advisory Committee member of the seventh *IEEE Seventh International Conference on Wireless and Optical Communications Networks for Next Generation Internet (WOCN)*.

Technical Program Committee Member

IEEE 5G World Forum TPC member of 5G World Forum, 2018-2021.

INFOCOM TPC member of IEEE INFOCOM workshop on Integrating Edge Computing, Caching, and Offloading in Next Generation Networks, 2017 and 2018.

IEEE ICC TPC member of IEEE International Communications Conference (ICC), years 2005-2018.

IEEE GlobeCom TPC member of IEEE Global Communications Conference (Globecom), 2022 and years 2009-2019.

IEEE WCNC TPC member of IEEE Wireless Communications & Networking Conference (WCNC), years 2006-2008 and 2010-2016.

IEEE PIMRC TPC member of IEEE International Symposium on Personal Mobile and Radio Communications (PIMRC), 2008-2010 and 2012.

IEEE HOTPOST TPC member of IEEE International Workshop on Hot Topics in Peer-to-peer Computing and Social Networking (HotPOST), 2012.

IEEE ICNC TPC member of IEEE International Conference on Computing, Networking and Communications, Cloud Computing and Networking Symposium (ICNC-CLD), 2012 and 2013.

IEEE VTC TPC member of IEEE Vehicular Technology Conference (VTC), 1998, 2005 and 2006.

IEEE ISSTA TPC member of IEEE International Symposium on Spread Spectrum Techniques and Applications (ISSSTA), 2008.

DaMNet TPC member of International Workshop on Data Mining in Networks (DaMNet), years 2011-2016.

IEEE

since 2003 *IEEE Senior Member.*

years 1994-2002 *IEEE member.*

IEEE Reviewer

Served and currently serving as a reviewer of:

- *IEEE Transactions on Wireless Communications*
- *IEEE Transactions on Vehicular Technology*
- *IEEE Transactions on Communications*
- *Communications Magazine*
- *IEEE Communications Letters.*

Most Relevant Projects

March 2024 - ongoing Principal Investigator of the PNRR Research Project "vulnerAble road users' protection: turning the sustainabLE mobility dream into RealiTy (ALERT)"

December 2019 - April 2021 Principal Investigator of the experimental project “eXploiting multi-radio access Technologies for emeRgency communicAtions in vehiCulAr enviRonmentS (XTRA-CARS)” funded by the cascade call for experiments of the H2020 project Orchestration and Reconfiguration Control Architecture (ORCA).

December 2017 - May 2019 Principal Investigator of the experimental project “Dynamic Energy-Aware PaTh Selection in Hybrid WIreless SeTtings (DART-HIT)” funded by the cascade call for experiments of the H2020 project Wireless Software and Hardware platforms for Flexible and Unified radio and network control (WiSHFUL).

July 2012 Coordinator of the Erasmus Intensive Programme for PhD students “Multimedia and the Future Internet: Moving Social and Mobile” funded by the EU, along with the University of Cambridge, University of Lancaster (UK), Technische Universitaet Darmstadt (DE), Technische Universiteit Eindhoven (NL), Universitaet Klagenfurt (A).

Awards

December 2020 Best poster award for the paper “Estimation of Traffic Matrices via Super-resolution and Federated Learning,” 2020 ACM International Conference on emerging Networking EXperiments and Technologies (CoNEXT 2020).

September 2013 Best student paper award for the paper “Performance analysis of randomized distributed space-time codes in Nakagami-m fading,” 2013 International Conference on Advanced Technologies for Communications (ATC 2013).

Patent

2019 “A solution for the delivery of event-triggered messages to vehicles through the network of a cellular mobile operator,” coauthored with Lorenzo Gibellini.

Recent Journal Publications

2024b L. Lusvarghi, B. Coll-Perales, J. Gozalvez and M. L. Merani, “Link Level Analysis of NR V2X Sidelink Communications,” in *IEEE Internet of Things Journal*, doi: 10.1109/JIOT.2024.3402551.

- 2024a** L. Lusvarghi, A. Molina-Galan, B. Coll-Perales, J. Gozalvez, **M.L. Merani**, “On the Impact of Re-evaluation in 5G NR V2X Mode 2,” in *IEEE Transactions on Vehicular Technology*, vol. 73, no. 2, pp. 2669-2683, Feb. 2024, doi: 10.1109/TVT.2023.3318235.
- 2023** L. Lusvarghi, C. A. Grazia, M. Klapez, M. Casoni and **M. L. Merani**, “Awareness Messages by Vulnerable Road Users and Vehicles: Field Tests via LTE-V2X,” in *IEEE Transactions on Intelligent Vehicles*, vol. 8, no. 10, pp. 4418-4433, Oct. 2023, doi: 10.1109/TIV.2023.3280744.
- 2022b** L. Lusvarghi and **M.L. Merani**, “Fundamental Limits on the Uplink Performance of the Dynamic-Ordered SIC Receiver,” in *IEEE Access*, vol. 10, pp. 73178-73189, 2022, doi: 10.1109/ACCESS.2022.3190624.
- 2022a** L. Lusvarghi and **M.L. Merani**, “Machine Learning for Disseminating Cooperative Awareness Messages in Cellular V2V Communications,” in *IEEE Transactions on Vehicular Technology*, vol. 71, no. 7, pp. 7890-7903, July 2022, doi: 10.1109/TVT.2022.3170982.
- 2021** **M.L. Merani**, D. Croce and I. Tinnirello, “Rings for Privacy: An Architecture for Large Scale Privacy-Preserving Data Mining,” in *IEEE Transactions on Parallel and Distributed Systems*, vol. 32, no. 6, pp. 1340-1352, 1 June 2021, doi: 10.1109/TPDS.2021.3049286.
- 2020b** L. Lusvarghi and **M.L. Merani**, “On the Coexistence of Aperiodic and Periodic Traffic in Cellular Vehicle-to-Everything,” in *IEEE Access*, vol. 8, pp. 207076-207088, 2020, doi: 10.1109/ACCESS.2020.3038307.
- 2020a** E. Cipressi and **M.L. Merani**, “An Effective Machine Learning (ML) Approach to Quality Assessment of Voice Over IP (VoIP) Calls,” in *IEEE Networking Letters*, vol. 2, no. 2, pp. 90-94, June 2020, doi: 10.1109/LNET.2020.2984721.
- 2019** **M.L. Merani** and N. C. Beaulieu, “A Novel Weighted-Counter Method for Simulating Coherent TWDP Fading Channels,” in *IEEE Wireless Communications Letters*, vol. 8, no. 4, pp. 1099-1102, Aug. 2019, doi: 10.1109/LWC.2019.2907954.
- 2017** L. Natali and **M.L. Merani**, “Successfully Mapping DASH Over a P2P Live Streaming Architecture,” in *IEEE Transactions on Circuits and Systems for Vi-*

deology, vol. 27, no. 6, pp. 1326-1339, June 2017, doi: 10.1109/TC-SVT.2016.2539611.

2016 M.L. Merani and L. Natali, “Adaptive Streaming in P2P Live Video Systems: a Distributed Rate Control Approach,” in *ACM Transactions on Multimedia Computing, Communications and Applications*, ISSN 1551-6857. - 12:3(2016), pp. 1-1, doi: 10.1145/2912123.

Recent Conference Publications

2023b L. Lusvarghi, M.L. Merani and M. Andreani, “A Statistical Characterization of the Actual Cooperative Perception Messages and a Generative Model to Reproduce Them,” in 2023 IEEE Future Networks World Forum (FNWF), November 11-15, 2023, Baltimore, MD, USA, pp.1-7, doi: 10.1109/FNWF58287.2023.10520622.

2023a M.L. Merani, M. Andreani, A. Horváth and M. Sereno, “A Novel Queuing Theory Approach for Modeling Connected Automated Vehicles as Traffic Sources,” in International Teletraffic Congress ITC 35th, PhD Workshop, October 3-5, 2023, Turin, Italy.

2022 A. Molina-Galan, B. Coll-Perales, L. Lusvarghi, J. Gozalvez and M.L. Merani, “How does 5G NR V2X Mode 2 Handle Aperiodic Packets and Variable Packet Sizes?,” in *2022 IEEE 23rd International Conference on High Performance Switching and Routing (HPSR)*, Taicang, Jiangsu, China, 2022, pp. 183-188, doi: 10.1109/HPSR54439.2022.9831314.

2021 L. Lusvarghi and M.L. Merani, “MoReV2X - A New Radio Vehicular Communication Module for ns-3,” in *IEEE 94th Vehicular Technology Conference (VTC2021-Fall)*, Norman, OK, USA, 2021, pp. 1-7, doi: 10.1109/VTC2021-Fall52928.2021.9625478.

2019 E. Cipressi and M.L. Merani, “A Comparative Study on the Quality of Narrow-Band and Wide-Band AMR VoLTE Calls,” in *15th International Wireless Communications and Mobile Computing Conference (IWCMC)*, Tangier, Morocco, 2019, pp. 1273-1278, doi: 10.1109/IWCMC.2019.8766598.

2018c E. Cipressi and M.L. Merani, “Effects of Packet Loss and Jitter on VoLTE Call Quality,” in *ACM CoNEXT*, Heraklion/Crete, Greece, December 4-7, 2018.

- 2018b** L. Gibellini and **M.L. Merani**, “Out-of-Coverage Multi-Hop Road Safety Message Distribution via LTE-A Cellular V2V (C-V2V),” in *IEEE 88th Vehicular Technology Conference (VTC-Fall)*, Chicago, IL, USA, 2018, pp. 1-6, doi: 10.1109/VTC-Fall.2018.8690591.
- 2018a** **M.L. Merani**, “Recovery Failure Probability of Power-Based NOMA on the Uplink of a 5G Cell for an Arbitrary Number of Superimposed Signals,” in *IEEE International Conference on Communications (ICC)*, Kansas City, MO, USA, 2018, pp. 1-6, doi: 10.1109/ICC.2018.8422476.
- 2015c** L. Natali and **M.L. Merani**, “A Novel Rate Control Strategy for Adaptive Video Streaming in P2P Overlays,” in *IEEE Global Communications Conference (GLOBECOM)*, San Diego, CA, USA, 2015, pp. 1-7, doi: 10.1109/GLOCOM.2015.7417031.
- 2015b** F. Randazzo, D. Croce, I. Tinnirello, C. Barcellona and **M.L. Merani**, “Experimental evaluation of privacy-preserving aggregation schemes on planetlab,” in *IEEE International Wireless Communications and Mobile Computing Conference (IWCMC)*, Dubrovnik, Croatia, 2015, pp. 379-384, doi: 10.1109/IWCMC.2015.7289113.
- 2015a** **M.L. Merani**, C. Barcellona and I. Tinnirello, “Multi-cloud privacy preserving schemes for linear data mining,” in *IEEE International Conference on Communications (ICC)*, London, UK, 2015, pp. 7095-7101, doi: 10.1109/ICC.2015.7249458.
- 2014** J. Soffritti, T. Q. Duong, **M.L. Merani** and H. -J. Zepernick, “Performance Analysis of Randomized Distributed Space-Time Codes over Composite Gamma/Lognormal Fading Channels,” in *IEEE 80th Vehicular Technology Conference (VTC2014-Fall)*, Vancouver, BC, Canada, 2014, pp. 1-5, doi: 10.1109/VTCFall.2014.6966117.
- 2013** J. Soffritti, H. -J. Zepernick and **M.L. Merani**, “Performance analysis of randomized distributed space-time codes in Nakagami-m fading,” in *International Conference on Advanced Technologies for Communications (ATC 2013)*, Ho Chi Minh City, Vietnam, 2013, pp. 408-413, doi: 10.1109/ATC.2013.6698146.

Book

- M.L. Merani**, M. Casoni and W. Cerroni, “Hands on Networking: from Theory to Practice,” Cambridge University Press, 2009.

Book Chapter

M.L. Merani and D. Saladino, “Live Video and IP-TV,” in Handbook of Peer-to-Peer Networking, Springer, USA, 2009, doi:10.1007/978-0-387-09751-0_35.

Complete List of Publications

Refer to the following URL: <http://personale.unimore.it/rubrica/pubblicazioni/merani>

2 Teaching activity

Department of Engineering ”Enzo Ferrari”

University of Modena and Reggio Emilia, Italy

- Undergraduate course in Electronics Engineering:

(i) *Telecommunication Networks*

- Graduate course in Electronics Engineering:

(ii) *Networking Technologies and Protocols*

3 Addresses and Contacts

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