

# Luca Bedogni, PhD

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Homepage: <http://academic.lucabedogni.it>  
Born: 1st July, 1985  
Citizenship: Italian

## Work Experience

November 2019 - current, Department of Physics, Informatics and Mathematics, University of Modena and Reggio Emilia, Italy

Tenured Assistant Professor

July 2018 - November 2019, Department of Computer Science and Engineering, University of Bologna, Italy

Assistant Professor

February 2015 - June 2018, Department of Computer Science and Engineering, University of Bologna, Italy

Research Fellow

## Research visits

2019 - Donald Bren School of Computer Science, University of California, Irvine. Host: Prof. Marco Levorato

2017 - Donald Bren School of Computer Science, University of California, Irvine. Host: Prof. Marco Levorato

2015 - Queen Mary University London. Host: Prof. Yue Gao

2013 - RWTH Aachen university. Host: Prof. Petri Mähönen

## Education

**Department of Computer Science, University of Bologna 2012-2015**  
**PhD Student in Computer Science**

Won a 3 years grant offered by Telecom Italia SpA.

**Department of Computer Science, University of Bologna 2008-2011**  
**Master degree in computer science**

Mark: 110 cum laude.

**Department of Computer Science, University of Bologna 2004-2008**  
**Bachelor degree in computer science**

## Main Research activity

Analytical Modelling and Performance evaluation of wireless networks

TV White Spaces, 802.11af, 802.15.4m

Context Aware Mobile Application and Indoor Localization

Cognitive wireless networks, Vehicular Ad Hoc Networks

## Teaching activities

**2018 Adjunct Professor**, for the second part of the class Mobile applications laboratory, Department of Computer Science, University of Bologna.

**2017-2018 Teacher Assistant (TA)** for the class Algorithms and Data Structures, Department of Computer Science, University of Bologna.

**2015 Teacher Assistant (TA)** for the class Programming Languages, Department of Computer Science, University of Bologna.

**2012-2017 Teacher Assistant (TA)** for the class Mobile applications laboratory, Department of Computer Science, University of Bologna.

**2012-2018 Teaching contract** for the class Server administration with Linux, COFIMP, Bologna.

**2011 Teaching Contract** for the class Analyst with JAVA and UML, IAL Emilia Romagna, Bologna.

**2008-2009 Teaching Contract** for the class PHP and dynamic websites, IAL Emilia Romagna, Bologna.

**2007 Teaching Contract** for the class Linux as a Server, ITC Blaise Pascal, Reggio Emilia.

## Participation to research projects

2019-present [**Private Grant**] Predictive maintenance on industrial plants, grant by DIGIBELT Ltd. (**Principal Investigator**)

2019 [**Private Grant**] Industry 4.0, grant by FAVA SpA (**Principal Investigator**)

2019 [**Private Grant**] Smart factory, grant by DIGIBELT Ltd. (**Principal Investigator**)

2015-2017 [**Private Grant**] TVWS exploitation in Indoor Environments, Joint Project with Telecom Italia SpA. (**Co-Principal Investigator**)

2012-2015 [**PRIN**] Italian research project, STEM-NET, Staminial devices for self-adapting Wireless Networks. (**Research Team Participant**)

2011-2016 [**EU-FP7**] Project Internet of Energy (IoE), to develop new remote services for the electrical mobility. (**Research Team Participant**)

2013-2017 [**Artemis**] Project Arrowhead, to develop interfaces for the electric mobility. (**Research Team Participant**)

2015-2016 [**EIT-ICT**] Labs Project, to develop pre-deployment tools for the electric mobility. (**Research Team Participant**)

## Publications

### *Book Chapters*

L. Bedogni, M. Di Felice, L. Bononi, "Dynamic Spectrum Access for Machine-to-Machine Communications: Opportunities, Standards and Open Issues", to appear on Cognitive Radio Applications and Practices, Springer, 2018

M. Di Felice, L. Bedogni, L. Bononi, "Reinforcement-learning Based Spectrum Management for Cognitive Radio Networks: Use-cases and Deployments", to appear on Cognitive Radio Applications and Practices, Springer, 2018

## *International Journals*

- F. Montori, L. Bedogni, M. Di Felice, L. Bononi, "Machine-to-machine wireless communication technologies for the Internet of Things: Taxonomy, comparison and open issues", in Elsevier Pervasive and Mobile Computing, 2018,
- L. Bedogni, A. Trotta, M. Di Felice, Y. Gao, X. Zhang, Q. Zhang, F. Malabocchia, L. Bononi, "Dynamic Adaptive Video Streaming on Heterogeneous TVWS and Wi-Fi networks", in IEEE/ACM Transactions on Networking, vol. 25, no. 6, pp. 3253-3266, Dec. 2017
- Montori F., Bedogni L., Bononi L., "A Collaborative Internet of Things Architecture for Smart Cities and Environmental Monitoring", in IEEE Internet of Things Journal , vol.PP, no.99, pp.1-1
- Bedogni L., Achtzehn A., Petrova M., Mahonen P., Bononi L., "Performance of IEEE 802.15.4m WSNs in TV Grayspace", ACM Transactions on Sensor Networks (ACM TOSN), Volume 13 Issue 1, January 2017
- Bedogni L., Di Felice M., Malabocchia F., Bononi L., Indoor Use of Gray and White Spaces: Another Look at Wireless Indoor Communication, IEEE Vehicular Technology Magazine, in IEEE Vehicular Technology Magazine, vol. 12, no. 1, pp. 63-71, March 2017
- L. Bedogni, M. Di Felice, L. Bononi, "Context-Aware Android Applications through Transportation Mode Detection Techniques", Wireless Communication and Mobile Computing Journal (WCMC), 16 (November 2016), 2523-2541
- L. Bedogni, L. Bononi, A. D'Elia, M. Di Felice, T. Salmon Cinotti, "A Route Planner Service with Recharging Reservation: Electric Itinerary with a Click", in IEEE Intelligent Transportation Systems Magazine, vol. 8, no. 3, pp. 75-84, Fall 2016.
- D'Elia A., Viola F., Montori F., Di Felice M., Bedogni L., Bononi L., Borghetti A., Azzoni P., Bellavista P., Tarchi D., Mock R., Salmon Cinotti T., "Impact of Interdisciplinary Research on Planning, Running, and Managing Electromobility as a Smart Grid Extension", IEEE Access, Vol.3, pp. 2281-2305, ISSN: 2281-2305, November 2015
- L. Bedogni, M. Gramaglia, A. Vesco, M. Fiore, J. Harri, F. Ferrero, "The Bologna ringway dataset: improving road network conversion in SUMO and validating urban mobility via navigation services", in IEEE Transactions on Vehicular Technology, vol. 64, no. 12, pp. 5464-5476, Dec. 2015.
- A. Trotta, M. Di Felice, L. Bedogni, L. Bononi, F. Panzieri, "Connectivity Recovery in Post-Disaster Scenarios through Cognitive Radio Swarms", in Elsevier's Computer Networks Journal (COMNET), Volume 91, 2015, Pages 68-89, ISSN 1389-1286
- Luca Bedogni, Luciano Bononi, Marco Di Felice, Alfredo D'Elia, Randolph Mock, Francesco Morandi, Simone Rondelli, Tullio Salmon Cinotti, Fabio Vergari, "An Integrated Simulation Framework to Model Electric Vehicles Operations and Services", in IEEE Transactions on Vehicular Technology, vol. 65, no. 8, pp. 5900-5917, Aug. 2016.
- G. Aloï, Luca Bedogni, L. Bononi, O. Briante, M. Di Felice, V. Loscri, P. Pace, F. Panzieri, G. Ruggeri, A. Trotta, "STEM-NET: How to Deploy a Self-Organizing Network of Mobile End-User Devices for Emergency Communication", on Elsevier Computer Communication Journal (COMCOM), 2015
- Gianluca Aloï, Luca Bedogni, Marco Di Felice, Valeria Loscri, Antonella Molinaro, Enrico Natalizio, Pasquale Pace, Giuseppe Ruggeri, Angelo Trotta, Nicola Roberto Zema, "STEM-Net: an evolutionary network architecture for smart and sustainable cities", on Transactions on Emerging Telecommunication Technologies, 2014
- M. Di Felice, L. Bedogni, L. Bononi, "Group Communication on Highways: An Evaluation Study of Geocast Protocols and Applications", on Elsevier's Ad Hoc Networks Journal, 2013

## *International Conferences*

Bedogni L., Bujor O., Levorato M., "Texting and Driving Recognition exploiting subsequent turns leveraging Smartphone sensors", to appear on Proceedings of the 2019 IEEE 20th International Symposium on "A World of Wireless, Mobile and Multimedia Networks" (WoWMoM) (IEEE WoWMoM 2019), Washington D.C., USA, June 9-12 2019

Bedogni L., Bononi L., "Vehicular Route Identification Using Mobile Devices Integrated Sensors", on Proceedings of the 1st International Workshop on Pervasive Computing for Vehicular Systems (PerVehicle 2019), Kyoto, Japan, 11-15 March 2019

Bedogni L., Alcaras A., Bononi L., "Permission-free Keylogging through Touch Events Eavesdropping on Mobile Devices", on Proceedings of the 3rd International Workshop on Annotation of useR Data for Ubiquitous Systems (ARDUOUS 2019), Kyoto, Japan, 11-15 March 2019.

Bedogni L., Levorato M., "Rising User Privacy Against Predictive Context Awareness through Adversarial Information Injection", on Proceedings of IEEE Global Communications Conference: Selected Areas in Communications: Social Networks (Globecom2018 SAC SN), Abu Dhabi, United Arab Emirates, 9-13 December 2018

Bisio I., Sciarrone A., Bedogni L., Bononi L., "WiFi meets Barometer: Smartphone-based 3D Indoor Positioning Method", on Proceedings of IEEE ICC 2018 Next Generation Networking and Internet Symposium (ICC'18 NGNI), Kansas City, MO, 20-24 May 2018

Luca Bedogni, Luciano Bononi, Roberto Canegallo, Fabio Carbone, Marco Di Felice, Eleonora Franchi, Federico Montori, Luca Perilli, Tullio Salmon Cinotti, Angelo Trotta, "Dual-Mode Wake-Up Nodes for IoT Monitoring Applications: Measurements and Algorithms", on Proceedings of "IEEE ICC 2018 Ad-Hoc and Sensor Networking Symposium (ICC'18 AHSN)", Kansas City, MO, 20-24 May 2018

Bedogni L., Fiore M., Glacet C., "Temporal Reachability in Vehicular Networks", on Proceedings of IEEE INFOCOM 2018 - IEEE Conference on Computer Communications (INFOCOM 2018), Honolulu, Hawaii, 15-18 April 2018

Carpineti C., Lomonaco V., Bedogni L., Di Felice M., Bononi L., "Custom Dual Transportation Mode Detection by Smartphone Devices Exploiting Sensor Diversity", on IEEE CoMoRea'18, the 14th Workshop on Context and Activity Modeling and Recognition, in conjunction with IEEE Percom 2018, Athens, Greece, March 18th.

Montori F., Bedogni L., Morselli F., Bononi L., "Achieving IoT Interoperability through a Service Oriented In-Home Appliance", on Proceedings of the 2017 IEEE Global Communications Conference: Selected Areas in Communications: Internet of Things (Globecom2017 SAC IoT), 4-8 December 2017, Singapore

F. Montori, L. Bedogni, L. Bononi, "Distributed Data Collection Control in Opportunistic Mobile Crowdsensing", in Proceedings of the MOBICOM 2017 Workshop on Experiences with the Design and Implementation of Smart Objects, 16-20 October 2017, Snowbird, UT, USA

Montori F., Contigiani R., Bedogni L., "Is WiFi suitable for energy efficient IoT deployments? A performance study", 2017 IEEE 3rd International Forum on Research and Technologies for Society and Industry (RTSI), Modena, 2017, pp. 1-5

Montori F., Gramaglia M., Bedogni L., Fiore M., Sheikh F., Bononi L., Vesco A., "Automotive Communications in LTE: a Simulation-based Performance Study", to appear on Proceedings of IEEE VTC-Fall 2017, Toronto, Canada

Bedogni L., Di Felice M., Bononi L., "Dynamic Segment Size Selection in HTTP Based Adaptive Video Streaming", 2017 IEEE Conference on Computer Communications Workshops (INFOCOM WKSHPS), Atlanta, GA, 2017, pp. 665-670.

Montori F., Bedogni L., Di Chiappari A., Bononi L., "SenSquare: a Mobile Crowdsensing Architecture for Smart Cities", on Proceedings of the 2016 IEEE 3rd World Forum on Internet of Things (IEEE WF-IoT 2016), Dec. 12-14 2016, Reston, VA, USA,

Di Felice M., Bedogni L., Bononi L., The Emergency Direct Mobile App: Safety Message Dissemination over a Multi-Group Network of Smartphones using Wi-Fi Direct, on Proceedings of the 14th ACM International Symposium on Mobility Management and Wireless Access (MobiWac 2016), Nov. 13-17, 2016, Malta

Caiati, V., L. Bedogni, L. Bononi, F. Ferrero, M. Fiore, and A. Vesco, "Estimating Urban Mobility with Open Data: A Case Study in Bologna", on Proceedings of the 2nd IEEE International Smart Cities Conference (ISC2) 2016, Sept. 12-15, 2016, Trento, Italy,

L. Bedogni, F. Franzoso, L. Bononi, "A Self-Adapting Algorithm based on Atmospheric Pressure to Localize Indoor Devices", on Proceedings of the 2016 IEEE Global Communications Conference: Ad Hoc and Sensor Networks (Globecom 2016) December 4-8 2016, Washington DC, USA

F. Montori, L. Bedogni, L. Bononi, "On the Integration of Heterogeneous Data Sources for the Collaborative Internet of Things", on Proceedings of the 2nd IEEE Internal Forum on Research and Technologies for Society and Industry, Technologies for smarter societies (IEEE RTSI 2016), September 7-9 2016, Bologna, Italy

Alfredo D'Elia, Marco Di Felice, Luca Bedogni, Mathias Duckheim, Randolph Mock, Tullio Salmon Cinotti, "From Brown Coal to a Rural Energy Landscape - Orchestration of Storage and Electric Mobility to foster Decentralized Energy Management", on Proceedings of the 2nd IEEE Internal Forum on Research and Technologies for Society and Industry, Technologies for smarter societies (IEEE RTSI 2016), September 7-9 2016, Bologna, Italy

A. Trotta, L. Bedogni, M. Di Felice, L. Bononi and E. Natalizio, "Enhancing TV White-Spaces Database with Unmanned Aerial Scanning Vehicles (UASVs)", on Proceedings of the 2nd ACM Workshop on Micro Aerial Vehicle Networks, Systems, and Applications for Civilian Use (ACM DroNet 2016), June 26-30, Singapore

R.Salpietro, L. Bedogni, M. Di Felice, L. Bononi, Park Here! A Smart Parking System Based on Smartphones' Embedded Sensors and Short Range Communication Technologies, on Proceedings of the IEEE World Forum on Internet of Things (WF-IoT), Milan, Italy, December 14-16, 2015

Luca Bedogni, Luciano Bononi, Marco Di Felice, Alfredo D'Elia, Tullio Salmon Cinotti, "WhatIF Application: Moving Electrically without an Electric Vehicle", on Proceedings of ACM DIVANET 2015, November 2-7 2015, Cancun, Mexico

Bedogni L., Trotta A., Di Felice M., "On 3-Dimensional Spectrum Sharing for TV White and Gray Space Networks", 2015 IEEE 16th International Symposium on A World of Wireless, Mobile and Multimedia Networks (WoWMoM), Boston, MA, 2015, pp. 1-8.

Bedogni L., Bononi L., Borghetti A., Bottura R., D'Elia A., Salmon Cinotti T., "Integration of traffic and grid simulator for the analysis of e-mobility impact on power distribution networks", on Proceedings of the IEEE Power and Energy Engineering Conference (IEEE PowerTech) 2015, June 29 2015-July 2 2015, Eindhoven, Netherlands, 2015

Marcos Fagundes Caetano, Jacir Bordim, Luca Bedogni, Luciano Bononi, "A Collision-Free Contention Protocol Based on Pulse/Tone Signals", on Proceedings of the IEICE Second International Symposium on Computing and Networking (CANDAR 2014), 10-12 December 2014, Mt. Fuji, Shizuoka, Japan. **Best Paper Award.**

Luca Bedogni, Marco Di Felice, Fabio Malabocchia, Luciano Bononi, "Cognitive Modulation and Coding scheme Adaptation for 802.11n and 802.11af networks", on Proceedings of the 3rd IEEE International Workshop on Telecommunication Standards: from research to Standards (IEEE GLOBECOM 2014), 8 December 2014, Austin (TX), USA

Marco Di Felice, Angelo Trotta, Luca Bedogni, Kaushik Chowdhury, Luciano Bononi, "Self-Organizing Aerial Mesh Networks for Emergency Communication", Proceedings of the 25th IEEE International Symposium on Personal, Indoor, and Mobile Radio Communications (PIMRC 2014 - Mobile and Wireless Networks), 2-5 September 2014, Washington, DC, USA

Luca Bedogni, Luciano Bononi, Alfredo D'Elia, Marco Di Felice, Simone Rondelli, Tullio Salmon Cinotti, "A Mobile Application to Assist Electric Vehicles' Drivers with Charging Services", Proceedings of the 8th International Conference and Exhibition on Next Generation Mobile Applications, Services, and Technologies (IEEE NGMAST 2014), 10-12 September 2014, Oxford, UK.

L. Bedogni, L. Bononi, A. D'Elia, M. Di Felice, M. Di Nicola, T. Salmon Cinotti "Driving Without Anxiety: a Route Planner Service with Range Prediction for the Electric Vehicles", Proceedings of the 3rd International Conference on Connected Vehicles & Expo (IEEE ICCVE 2014), 3-7 November 2014, Wien, Austria

Luca Bedogni, Marco Di Felice, Angelo Trotta, Luciano Bononi, "Distributed Mobile Femto-Databases for Cognitive Access to TV White Spaces", Proceedings of the IEEE 80th Vehicular Technology Conference (VTC 2014-Fall), 14-17 September 2014, Vancouver, Canada

Luca Bedogni, Andreas Achtzehn, Marina Petrova, Petri Mähönen, "Smart meters with TV gray spaces connectivity: A feasibility study for two reference network topologies", 2014 Eleventh Annual IEEE International Conference on Sensing, Communication, and Networking (SECON), Singapore, 2014, pp. 537-545.

Luca Bedogni, Marco Di Felice, Fabio Malabocchia, Luciano Bononi, "Indoor Communication over TV Gray Spaces based on Spectrum Measurements", on Proceedings of the IEEE Wireless Communications and Networking Conference (IEEE WCNC 2014), April 6-9, 2014, Istanbul, Turkey

Luca Bedogni, Angelo Trotta, Marco Di Felice, Luciano Bononi, "Machine-to-Machine Communication over TV White Spaces for Smart Metering Applications", on Proceedings of the 12th IEEE International Conference on Computer Communications and Networks (ICCCN 2013) - Sensor networks, Embedded Systems, and Pervasive Computing Track, July 30-August 2, Nassau, Bahamas, pp. 1-7, ISBN: 978-1-4673-5774-6

Marco Di Felice, Luca Bedogni, Angelo Trotta, Luciano Bononi, Fabio Panzieri, Giuseppe Ruggeri, Gianluca Aloï, Valeria Loscrí, Pasquale Pace, "Smartphones Like Stem Cells: Cooperation and Evolution for Emergency Communication in Post-Disaster Scenarios", on Proceedings of the First IEEE International Black Sea Conference on Communications and Networking 2013 (IEEE BlackSeaCom 2013), July 3-5, 2013, Batumi, Georgia, pp. 28-33

Angelo Trotta, Marco Di Felice, Luca Bedogni, Luciano Bononi, "Re-establishing Network Connectivity in Post-Disaster Scenarios Through Mobile Cognitive Radio Networks", on Proceedings of the 12th IEEE Mediterranean Ad Hoc Networking Workshop (IEEE Med-Hoc-Net 2013), June 24-26, 2013, Ajaccio, Corsica, France, pp. 18-25 **Best Paper Award**.

Luca Bedogni, Luciano Bononi, Marco Di Felice, Alfredo D'Elia, Randolph Mock, Federico Montori, Francesco Morandi, Luca Roffia, Simone Rondelli, Tullio Salmon Cinotti, Fabio Vergari, "An Interoperable Architecture for Mobile Smart Services over the Internet of Energy", on Proceedings of IEEE WoWMoM Workshop on Smart City and Ubiquitous Computing Applications (SCUCA 2013), June 4, 2013, Madrid, Spain, pp. 1-6, ISBN: 978-1-4673-5827-9

Marco Di Felice, Angelo Trotta, Luca Bedogni, Luciano Bononi, Fabio Panzieri, Giuseppe Ruggeri, Valeria Loscrí, Pasquale Pace, "Self-Organizing Mobile Cognitive Radio Network for Disaster Recovery Operations", on Proceedings of the 9-th IEEE International Wireless Communications and Mobile Computing Conference (IWCMC 2013), July 1-5, 2013, Cagliari, Italy, pp.602-608, ISBN: 978-1-4673-2479-3

Lanese I., Bedogni L., Di Felice M. "Internet of Things: A Process Calculus Approach", In Proceedings of the 28th Annual ACM Symposium on Applied Computing (SAC '13). ACM, New York, NY, USA, 1339-1346

L. Bedogni, M. Di Felice, L. Bononi, "By Train or By Car? Detecting the User's Motion Type through Smartphone Sensors Data" Proceedings of the 5th IFIP International Conference Wireless Days 2012 (WD 2012), November 21-23, 2012, Dublin, Ireland

M. Di Felice, L. Bedogni, L. Bononi, "DySCO: A Dynamic Spectrum and COntention Control Framework for Enhanced Broadcast Communication in Vehicular Networks" on proceedings of the 10th ACM

International Symposium on Mobility Management and Wireless Access (MobiWAC 2012), Oct. 21-25, 2012, Paphos, Cyprus Island. **Best Paper Award.**

M. Di Felice, L. Bedogni, L. Bononi, "Dynamic Backbone for Fast Information Delivery in Vehicular Ad Hoc Networks: An Evaluation Study", on Proceedings of the 8-th ACM International Symposium on Performance Evaluation of Wireless Ad Hoc, Sensor, and Ubiquitous Networks (ACM PE-WASUN 2011), Miami, FL, USA, Oct. 31 - Nov. 4, 2011

## Professional Service

**Academic Editor** Hindawi Journal on Mobile Information Systems

**Co-Guest Editor** of the Elsevier's Pervasive and Mobile Computing (PMC) Journal on "Crowdsensed Big Data for IoT".

**TPC Co-Chair** of the 9th Workshop on Information Quality and Quality of Service for Pervasive Computing (IQ2S 2018), in conjunction with IEEE Percom 2018

**PC Co-Chair** of the International Workshop on Emerging COgnitive Radio Applications and aLgorithms 2015-2017, held in conjunction with IEEE WoWMoM 2015-2017.

**Technical Program Committee Member** for numerous IEEE/ACM/IFIP conferences. A selected list:

IEEE WoWMoM (2015-present)

IEEE CCNC (2015-present)

IEEE Globecom (2019-present)

ACM MSWIM (2019 -present)

**Journal reviewer** for numerous journals like Elsevier Computer Communications, Wiley Transactions on Emerging Telecommunication Technologies, Elsevier Ad-Hoc Networks Journal, Elsevier Computer Networks.

## Awards

Best paper award for the article "DySCO: A Dynamic Spectrum and COntention Control Framework for Enhanced Broadcast Communication in Vehicular Networks" - MobiWAC 2012.

Best paper award for the article "Re-establishing Network Connectivity in Post-Disaster Scenarios Through Mobile Cognitive Radio Networks" - Med-Hoc-net 2013

Best paper award for the article "A Collision-Free Contention Protocol Based on Pulse/Tone Signals" - CANDAR 2014.