

**Michele Rossi, PhD****Current position****Associate Professor****Work address**

Department of Information Engineering (DEI), UNIPD, IT
via Gradenigo 6/B, 35131, Padova, Italy

E-mail

rossi@dei.unipd.it

Website

<http://www.dei.unipd.it/~rossi/>

h-index

22 (Scopus), 32 (Google Scholar) [updated: May 22, 2018]

Tot. citations

1954 (Scopus), 3839 (Google Scholar) [updated: May 22, 2018]

Short biography. Since May 2017, I am Associate Professor at the *Department of Information Engineering (DEI)*, University of Padova (UNIPD), Italy. My research interests are centered around **a)** stochastic modeling, optimization and protocol design for Wireless Sensor Networks (WSN) and Internet of Things (IoT), with focus on wearable IoT devices and smart health, **b)** optimization of mobile networks in the presence of renewable energy sources and **c)** optimization of market, control and telecommunication aspects of Smart Energy Grids. I have authored more than 100 scientific papers published in International conferences, book chapters and Journals, mainly of the IEEE, two patents (with DOCOMO) and I have been the recipient of *five best paper awards* from the IEEE. Since 2005, I have actively supervised the research activity on Internet of Things (IoT) within the Signet group @ DEI. In 2005–2009, I have collaborated with the Ubiquitous Networking Research group @ DOCOMO Euro-Labs (Munich, Germany) in the design of distributed processing, storage and data dissemination for ad hoc networks (Network Coding and Compressive Sensing). Since 2010, I have been working with WorldSensing (Barcelona, Spain) on optimized WSN solutions for Smart Cities and environmental monitoring, this collaboration led to joint publications and continues nowadays through the involvement in the H2020 MSCA SCAVENGE ITN. Since 2002, I have been involved in numerous EU projects on WSN/IoT such as EYES (protocols for energy efficient WSN, 2002–2005), e-SENSE (protocols and architectures for WSN, 2004–2007), SENSEI (WSN as enablers of the future Internet, 2007–2010) and SWAP (Marie Curie, Symbiotic Wireless Autonomous Powered systems, 2010–2014). In 2010–2013, I have been the technical coordinator of the protocol design activity (WP3) carried out in the EU IOT-A project (the flagship FP7 EU project on Internet of Things Architectures, 2010–2013) and a **senior Marie Curie researcher** within SWAP. Since 2010, I have been the Principal Investigator of **six** research projects, including **MOSAIC** ("MONitoring Sensor and Actuator networks through Integrated Compressive Sensing and data gathering", 2010–2012), a **SAMSUNG GRO** award on biometric signal processing for wearable IoT devices (2014–2015), the H2020 MSCA ITN **SCAVENGE** on mobile networks exploiting ambient energy (2016–2019) and the **IoT-SURF** project on software libraries and processing tools for connected and unconnected IoT objects (2016–2017). From 2011 to 2016 I have been Associate Editor of the IEEE Transactions on Wireless Communications. Since January 2016, I am Associate Editor of the IEEE Transactions on Mobile Computing. I have been on the TPC of 100+ international conferences and I serve as reviewer for scientific Journals of the IEEE, ACM, Springer and Elsevier. I am a *Senior Member* of the IEEE.



RESEARCH ACTIVITY

My research interests include: stochastic modeling and optimization of networking protocols, protocol design and performance evaluation of Wireless Sensor Networks (WSN) and Internet of Things (IoT), with focus on wireless systems powered by renewable energies. In the last few years, I have embraced new research avenues including: *i*) signal processing for wearable IoT devices, *ii*) the use of data mining and machine learning techniques within various IoT applications such as smart parking and human sensing, *iii*) communication and control of smart energy grids, and *iv*) the optimization of mobile networks in the presence of ambient energy sources.

Next, I provide a summary of the most relevant research directions and results.

- **Energy harvesting mobile networks (Feb. 2016–present):** I have recently started an intense research activity on energy harvesting mobile (5G) networks. This activity is supported by the European Commission through the H2020 ITN SCAVENGE. My main research objectives are centered around the design of energy management techniques (transmission, scheduling and energy trading) for future 5G networks with massive energy harvesting capabilities. Published papers are [16][66].
- **Wearable IoT Devices (Nov. 2014–present):** Since November 2014, I have started a major research activity on smart wearable devices, which involves human signal sensing and processing. One line of work deals with the compression of vital signs (e.g., electrocardiographic, ECG, respiration and plethysmographic data, PPG) for their efficient transmission over wireless channels [15][65][62][8]. A paper has also been published on the robust and lightweight heart beat detection in PPG signals [64]. On these topics, I have collaborated with SAMSUNG Korea, thanks to a research project funded within the SAMSUNG Global Research Outreach (GRO) program, see the project section of this CV. A second line of research is about human activity recognition. Two recent papers deal with the recognition of user identities from accelerometer and gyroscope data [63][3].
- **Telecommunication technology for Smart Energy Grids (2012–present):** Since 2012, I have investigated Smart Energy Grids. Published work deals with communication requirements and architectures [48], the characterization of renewable energy sources [70], electrical control of micro grids [67][68], the interplay of distributed power loss reduction techniques and communication protocols [13], energy consumption forecasting in households [61], and cellular systems powered by solar sources [16]. I have also paid special attention to the role of communication architectures, including the impact of communication errors, broken communication links, the scheduling order of control actions, etc., see also the book chapter [47]. Current research deals with the study of optimization frameworks involving the joint electrical optimization of the power grid and of the operations (e.g., bidding, selling and buying energy) that are expected to regulate the energy market in future residential power grid communities [86]. I am one of the co-founders of the SmartGrid research group at the Department of Information Engineering of the University of Padova, see: <http://smartgrid.dei.unipd.it/>.
- **Network protocol design for WSN and IoT (2010–present):** This is a lively research topic, involving the design of transmission protocols for energetically self-sustainable WSN and IoT systems. Published papers deal with the statistical characterization of renewable energy sources (micro solar panels and batteries), see [70], the design of transmission protocols for Energy Harvesting Wireless Sensor Networks (EH-WSN) [17][19][71], optimal signal compression strategies for EH-WSN [14] and wireless power trans-



fer [10]. This activity is being carried out within the research project ECCENTRIC (2016-2018), which has been recently funded by INTEL, see the project section of this CV.

- **Signal processing for WSN and IoT (2009–present):** This research activity is centered around the design and performance analysis of in-network processing techniques for WSN/IoT, including data aggregation [32], the statistical description of spatio-temporal signals [78] and the use of Compressive Sensing (CS) for the distributed compression of data, see [22][82][85][89]. This research line is still ongoing; topics of interest are: 1) compression policies for temporal signals [18][14], 2) optimal spatio-temporal transmission/compression policies for distributed signals in multi-hop WSN [19], 3) comparison of CS-based algorithms against state-of-the-art lossy compression schemes [69], 4) Covariogram-based compressive sensing for spatio-temporal compression in environmental sensor networks [12]. Another major contribution has been recently published on spatio-temporal data mining for smart parking applications [11]. This work originates from a *data mining context* that WorldSensing and I have run at the University of Padova: the best technique from our last year students was awarded by WorldSensing through a prize, a continued effort has led to its refinement and to a journal publication.
- **Protocol stack design for WSN and IoT (2003–2013):** Within this research theme, I have designed channel access and routing/data collection algorithms for WSN, see, e.g., [21][24][28], encompassing their theoretical analysis and their implementation. In 2010, I have designed and supervised the implementation of SYNAPSE on real WSN devices [24] [91], leading a team of developers. This resulted in a software for wirelessly reprogramming WSN which is being currently used by WorldSensing for the fast deployment and management of their WSN products for smart cities (smart parking). Some contributions on practical security suites for IoT have also been published, see [72][74][83].
- **TCP congestion control over wireless (2000–2012):** This research theme started with my PhD and involved the mathematical analysis of the Transmission Control Protocol (TCP) [40][44]. Recent research deals with the study of congestion control solutions for the Internet of Things [20]. On these topics, I collaborated with the European Space Agency (ESA), see the “Research Projects” section of this CV.
- **Simulation software for wireless networking (2007–2012)** with a special focus on ns2 and ns3. For ns2, I have led a team of developers who designed and implemented MIRACLE, the ns2 extension for the support of communication nodes with multiple protocol stacks, see [25][98]. Recent activity involves simulation models for WSN [75] (channel access for multiple carrier systems) and LTE [73] (a framework for the accurate and fast tracking of SINR traces in multi-antenna LTE systems).
- **Network coding (2005–2009):** In 2005-2009, I collaborated with DOCOMO Eurolabs in Munich, performing research on network coding for the dissemination of data in distributed and mobile wireless networks, see [26][88][95][99][102]. This collaboration led to the publication of two patents.
- **Automatic Repeat reQuest ARQ (2000–2008):** Starting with my PhD, I have carried out a major research activity on the statistical characterization of ARQ processes over wireless transmission channels. I investigated delivery delay statistics of Selective Repeat ARQ in, e.g., [36][37][39][43]. Hybrid ARQ processes were also studied see, e.g., [38][94][119][120]. On these topics, I collaborated with ERICSSON AB in Kista, Sweden.



EDUCATION

- **University of Ferrara – Dept. of Engineering** Ferrara, Italy
PhD Telecommunications Engineering 2001 - 2004
 - PhD degree, 26th of March 2004, **PhD in Telecommunications Engineering**, doctoral thesis entitled “Error Control Algorithms for Wireless Communication Networks: Analysis and Performance Evaluation”. Supervisor: Prof. Michele Zorzi. Final grade: “ottimo”.
- **University of Ferrara** Ferrara, Italy
M.S. Electrical Engineering 1995 - 2000
 - MS degree, 18th of February 2000, graduated **Magna Cum Laude** (5 years).
 - Major in Telecommunications Engineering.

WORK EXPERIENCE

- **University of Padova – Dept. of Inf. Engineering (DEI)** Padova, Italy
Associate Professor May 2017 - Current
 - Teaching: “Wireless Communications”, “Reti di Telecomunicazioni”, “Human Data Analytics”.
 - Research activity and supervision.
 - Member of scientific board and PhD school board at DEI.
 - Project management.
- **University of Padova – Dept. of Inf. Engineering** Padova, Italy
Assistant Professor October 2005 - April 2017
 - Teaching. Current courses are “Wireless Communications” and “Reti di Telecomunicazioni”.
 - Research activity and supervision.
 - Project management (EU projects, UNIPD projects, DOCOMO, ESA, SAMSUNG, INTEL).
- **WorldSensing (WS) & CTTC** Barcelona, Spain
Visiting Marie Curie Senior Researcher 2011- Current
 - Marie Curie senior researcher within the EU FP7 SWAP project.
 - Visited WS and CTTC in May 2011, April 2012, May 2013, May 2014 (two weeks per year) as part of the EU SWAP project and in June 2016 (two weeks) as part of the EU SCAVENGE ITN.
 - The activity within the SWAP project has led to several publications, e.g., [16][17][18][66][77].
- **EEMCS, University of Twente** Twente, The Netherlands
Visiting Researcher November 2004
 - Visiting researcher at the faculty of Electrical Engineering, Mathematics and Computer Science (EEMCS), University of Twente, The Netherlands.
 - Research on wireless sensor networks, under the supervision of Prof. Paul Havinga.
 - This period of study has led to the publication of paper [35].



- **University of California San Diego** San Diego, CA, US
Visiting Researcher – Center for Wireless Communications (CWC) March 2003-Oct. 2003
 - Visiting researcher at CWC, University of California, San Diego, US.
 - Research on wireless sensor networks, under the supervision of Prof. Ramesh R. Rao.
 - This period of study has led to the publication of papers [31][107][140].
- **University of Ferrara – Dept. of Engineering** Ferrara, Italy
Research Engineer (2000-2001), PhD Student (2001-2004) 2000 - 2004
 - Research on TCP, ARQ and HARQ processes see, e.g., [44][45][131][132].
 - Italian project VICOM (coordinated by CNIT).
 - Industrial collaborations: European Space Agency (ESA) and ERICSSON.
 - Involvement in EU Projects (Ambient Networks, EYES, e-SENSE).
- **Technical State Institute (ITIS) “Niccolò Copernico”** Ferrara, Italy
Professor of Computer Programming 2000
 - Professor of Computer Programming (C and C++ languages).

SKILLS

- **Programming:** C/C++, Wolfram Mathematica, Matlab[®], L^AT_EX.
- **Stochastic Modeling and Optimization:** Markov Processes, Dynamic Programming.
- **Machine Learning:** Hidden Markov Models, Self Organizing Maps (Unsupervised Learning), Clustering, Neural Networks.
- **Communication skills:** very good, gained through his extensive teaching experience (English certificated B2 level) and through his experience as a technical manager within several European projects and with major industries (ERICSSON, DOCOMO, ESA, CEA, SAMSUNG and INTEL).
- **Project writing:** Since EU FP6, Michele Rossi has been constantly involved in project writing activities at national and EU level, collaborating with major companies (ESA, CEA, DOCOMO, ERICSSON, SAMSUNG, INTEL), fast growing and successful SMEs (Wattics Ltd., WorldSensing) and research centers (CTTC, IMDEA).
- **Supervision and project management:**
 - Project management at technical and administrative levels.
 - Research team management (currently responsible for: **five** PhD students, **two** postdocs and several MS students, see section “Supervision” of this CV).

INSTITUTIONAL ACTIVITIES @ UNIPD

- Supervision of BS, MS, PhD students and Post-Doctoral researchers. Active involvement in scientific research and project writing activities.
- Principal investigator within several research projects, see the “Research Projects” section of this CV for further information.



- 2005-current: Instructor of several courses. Current courses are “Wireless Communications” (9 ECTS credits, 72 hours, taught in English) and “Reti di Telecomunicazioni” (6 ECTS credits, 48 hours). See the “Teaching” section of this CV for further information.
- January 2008-current: member of the PhD School of Information Engineering, since January 2008.
- January 2016-current: member of the PhD School Board “Consiglio Direttivo della Scuola di Dottorato”, since January 2016.
- 2009-current: Member and co-founder of the DEI Task Force on Residential Smart Micro-Grids, which brings together experts in Power Electronics, Control Theory, Telecommunications and Measurement Systems (<http://smartgrid.dei.unipd.it/>).
- October 2010-October 2016 (**six years**): member of the didactic commission and reference person for the ERASMUS International Exchange Program for the Master students of Telecommunication Engineering at the Department of Engineering (DEI), University of Padova.

AWARDS AND RECOGNITIONS

- **Best Paper Award** Singapore
IEEE 2017
 - Awarded by the IEEE Communications Society’s Transmission, Access, and Optical Systems (TAOS) Technical Committee for Best Paper in the “Green Communications Systems and Networks” Symposium. **Paper info:** Angel Fernandez Gambin, Michele Rossi, “Energy Cooperation for Sustainable Base Station Deployments: Principles and Algorithms,” IEEE GLOBECOM 2017, Singapore, 4-8 December, 2017.
- **Distinguished TPC Member** May 2017
IEEE INFOCOM
 - Awarded as one of the 100 distinguished TPC members of INFOCOM 2017.
- **Samsung Global Research Outreach (GRO) Award** 2014 - 2015
SAMSUNG Korea
 - Winner of a Samsung GRO Award with a project entitled “Boosting Efficiency in Biometric Signal Processing for Smart Wearable Devices”.
- **Outstanding Reviewer Award** April 2014
Elsevier Ad Hoc Networks
- **FP7 SWAP project selected by the EU Commission as a success story** March 1, 2014
European Commission
 - Article published on the Horizon 2020 Website on March 1, 2014 (<http://www.fp7-swap.eu/>).
- **Premio Città Impresa 2013** May 8, 2013
Nordest Europa
 - Awarded as one of the 1000 young talents in the Venice area among all disciplines, including academic research, entrepreneurs and athletics. Michele Rossi has received the “Premio Città Impresa” 2013 at the Teatro Comunale of Vicenza on the 8th of May 2013, for further information see <http://www.>



festivaldellecittaimpresa.it/.

- **ItaliX10**
TriesteNext, TELECOM Italia *September 20, 2012*
 - Michele Rossi has been selected to present his project idea on Smart-Grids, involving multi disciplinary research on telecommunications, control systems and power electronics at **ItaliaX10**, held on the 20-th of September 2012 at the Teatro Verdi of Trieste, Italy. ItaliaX10 is an event organized by TriesteNext and TELECOM Italia, where **ten young Italian researchers from all disciplines** were selected and invited to present highly innovative project ideas. The event has been chaired by Marco Cattaneo, director of “Le Scienze di Repubblica”. ItaliaX10 has been broadcast live on the Web, featuring the participation and the interaction with the audience in the theater and via the Web.

- **Best Tutorial Paper Award** *2008*
IEEE
 - Elena Fasolo, Michele Rossi, Jörg Widmer and Michele Zorzi, “In-Network Aggregation Techniques for Wireless Sensor Networks: A Survey,” IEEE Wireless Communication Magazine, April 2007.

- **Best Paper Award** *Washington, DC, US*
IEEE *2007*
 - Leonardo Badia, Nicola Bui, Marco Miozzo, Michele Rossi and Michele Zorzi, “Mobility Aided Routing in Multi-hop Heterogeneous Networks with Group Mobility,” IEEE GLOBECOM, Washington, DC, US. Nov. 26-30, 2007.

- **Best Paper Award** *Trento, Italy*
IEEE *2006*
 - Leonardo Badia, Nicola Bui, Marco Miozzo, Michele Rossi and Michele Zorzi, “On the Exploitation of User Aggregation Strategies in Heterogeneous Wireless Networks,” IEEE CAMAD, Trento, Italy, June 8-9, 2006.

- **Best Paper Award** *Maui, Hawaii, US*
IEEE *2005*
 - Michele Rossi, Leonardo Badia, Paolo Giacomini and Michele Zorzi, “On the Effectiveness of Logical Device Aggregation in Multi-radio Multi-hop Networks,” IEEE MobiWac, Maui, Hawaii, US. June 13-16, 2005.

- **Travel Grant** *New Orleans, US*
IEEE *2003*
 - In 2003 he has been awarded a **travel grant** for the attendance of the IEEE WCNC conference (held in New Orleans, US), where he presented two scientific papers.

The following MS students of Michele Rossi have been presented with the **InTesi Award**, offered by the “Parco Scientifico e Tecnologico Galileo” (<http://www.galileopark.it/>) to the **best Master theses in terms of innovation and cooperation with the industry** within the Padova-area:

- 2014: Riccardo Bonetto
- 2010: Davide Zordan, Andreini Alberto



- 2009: Fornasiero Francesco, Visonà Marco, Dissegna Moreno

SUPERVISION

Michele Rossi is an enthusiastic supervisor, possessing extensive experience in research project management. He is member of the PhD School Board (“Consiglio Direttivo della Scuola di Dottorato”) at the Department of Information Engineering, University of Padova. From 2008 to 2014, he has supervised four PhD and tens of bachelor and Master students. He is currently responsible for a group of researchers including **five** PhD students, **two** Post-Doctoral researchers and several Master thesis students. Their research work is being supported by **Fondazione CaRiPaRo** (PhD grant for International students, 2014-2016), **SAMSUNG Korea** (SAMSUNG GRO AWARD, 2014-2015), the **European Commission** (H2020 SCAVENGE, 2016-2019) and the **University of Padova** (Junior researcher grant, 2015-2018 and IoT-SURE, 2016–2018). The following research themes are being pursued: **a)** stochastic modeling, optimization and protocol design for Wireless Sensor Networks (WSN) and Internet of Things (IoT), with focus on wearable IoT devices (**ECCENTRIC** project) and smart health (**IoT-SURF** project), **b)** optimization of mobile networks in the presence of renewable energy sources (**H2020 SCAVENGE** project) and **c)** optimization of market, control and telecommunication aspects of Smart Energy Grids.

- **Supervised MS and BS Students (2005-2016)**

- 8 BS theses (1 as co-supervisor)
- 41 Master theses (8 of which as co-supervisor)

- **Supervised PhD Students (2008–2016)**

- Riccardo Masiero (XXIII ciclo, 2008–2010)
- Cristiano Tapparello (XXIV ciclo, 2009–2011)
- Davide Zordan (XXVI ciclo, 2011–2013)
- Riccardo Bonetto (XXVII ciclo, 2012–2014)
- Mohsen Hooshmand (XXIX ciclo, 2014–2016, funded by Cariparo)

- **Supervised Post-Doctoral Researchers**

- Riccardo Bonetto (UNIPD Junior grant, 2015–2017)
- Davide Zordan (UNIPD Junior grant, EC-CENTRIC project, 2014–2017)

CURRENT RESEARCH STAFF

- **PhD Students**

- * Davide Cecchinato (XXXIII ciclo, 2017-2020)
- * Michele Berno (XXXIII ciclo, 2017-2020)
- * Ángel Fernández Gambín (XXXII ciclo, 2016-2019, funded by the EU ITN SCAVENGE)
- * Thembelilhe Dlamini (XXXII ciclo, 2016-2019, funded by the EU ITN SCAVENGE)



* Matteo Gadaleta (XXXI ciclo, 2015–2018)

* Maria Scalabrin (XXXI ciclo, 2015–2018)

RESEARCH PROJECTS

Michele Rossi has developed a solid experience in project writing and management. He directly supervised the technical work within **twenty** projects, attending physical meetings, phone conferences and events. This activity continues through the creation of consortia and the writing of new proposals targeting industrial collaborations, national/regional and European funding schemes. See next for additional details.

- **H2020 SCAVENGE** Energy harvesting cellular networks
European Commission 2016–2019
 - Michele Rossi is the **Principal Investigator** of the H2020 research project “SCAVENGE” (<http://www.scavenge.eu/>), project no. H2020 MSCA-ITN 675891 (Pillar: **Excellent Science**), funded by the European Commission under the Horizon 2020 program. SCAVENGE is a Marie Skłodowska-Curie Innovative Training Network (MSCA-ITN). Call numbers: 1322 projects submitted, acceptance rate \approx 6.8%. **Budget:** 516.122 k€.
- **ECCENTRIC** Internet of Things
INTEL 2016–2018
 - Michele Rossi is the **Co-PI** of the “ECCENTRIC”, project funded by Intel (industrial collaboration). ECCENTRIC is a research grant on networking protocols for the Internet of Things involving heterogeneous radios and devices, energy harvesting, resource optimization and learning (adaptation). The project is set to design efficient network protocols (both distributed and centralized) and to validate them through selected experimental setups (e.g., smart buildings). The project will run for three full years. **Budget:** 581.759 kUS\$.
- **IoT-SURF** Internet of Things
University of Padova 2016–2017
 - Michele Rossi is the **Principal Investigator** of the “IoT-SURF” project: “IoT-SURF: a unifying abstraction and reasoning framework for connected and unconnected objects”, funded by the University of Padova. The main goal of IoT-SURF (the acronym stays for IoT Software libraries for Unified Representation and on-the-Fly data processing) is to develop an abstraction framework, and an associated processing library, to map connected Internet of Things (IoT) devices as well as unconnected physical objects (including human beings) into a common digital space. This space will be structured to facilitate search, visualization and decision making operations (complex reasoning). Within the project, we will develop software libraries and processing tools to perform scene recognition, context extraction and motion/activity recognition from inertial sensors from wearable technology, targeting assisted living and e-health applications. **Budget:** 43 k€.
- **Algeria-Italy** Internet of Things
Ministero Affari Esteri (MAE) 2016–2017
 - Michele Rossi is the **Principal Investigator** of a bilateral scientific collaboration (*mobility*) funded by MAE (“Ministero Affari Esteri”, <http://www.esteri.it/mae/>) and by the Algerian Government. The project is centered around the study of energy harvesting sensor networks and supports the mobility of senior researchers from the SIGNET group at Dept. of Engineering, University of Padova,



Italy (<http://signet.dei.unipd.it/>) and CERIST (<http://www.cerist.dz/>), located in Algiers, Algeria. **Financial support:** full support for travels and lodging for the researchers of the previously mentioned research groups.

- **Global Research Outreach (GRO) Program** Wearable IoT Devices
SAMSUNG Korea Oct. 2014–Oct. 2015
 - Michele Rossi has been the **Principal Investigator** of the research project “Boosting Efficiency in Biometric Signal Processing for Smart Wearable Devices”, funded by SAMSUNG under the Global Research Outreach (GRO) program. **Budget:** 84 k\$.
- **ENGINE – Junior Research Grant** Smart Energy Grids
University of Padova 2015–2016
 - Michele Rossi is the **Principal Investigator** of the research project “ENGINE: ENGINnering the INter-net of Energy” on the joint optimization of market, control and communication strategies in smart micro-grids.
 - Grant received to endow a Post-Doctoral researcher for two years. **Budget:** 20 k€
- **ESA SatNEx IV** Next Generation Satellite Networks
European Space Agency (ESA) 2015–Current
 - Michele Rossi is a **Senior Researcher** within the ESA SatNEx IV research program.
 - Next generation channel access for satellite networks, IoT traffic models.
- **EU SWAP – Marie Curie IAPP project** Wireless Sensor Networks
European Commission 2010–2014
 - Michele Rossi has been a **Marie Curie Senior Researcher** within EU SWAP (Symbiotic Wireless Autonomous Powered systems, IAPP FP7 project, G.A. no. 251557, <http://www.fp7-swap.eu/>). This project was funded by the Marie Curie Industry and Academia Partnerships and Pathways (IAPP) program. He has been involved in the design of energy scavenging Wireless Sensor Systems, frequently visiting WorldSensing and CTTC in Barcelona, Spain.
- **EU IoT-A** Internet of Things
European Commission 2010–2013
 - Internet of Things – Architecture (IoT-A) (integrated FP7 project, G.A. no. 257521, <http://www.iot-a.eu/>). Michele Rossi has been the **Deputy Work Package Leader** for Work Package 3: “Protocol Suite” and the **Task Leader** for the “IOT-A protocol suite design task”. In addition, he has supervised a team of researchers, implementers, one PhD and two Post-Doctoral researchers, dedicated to the development of IoT protocol stacks.
- **MOSAICS Research Project** Wireless Sensor Networks
University of Padova 2010–2013
 - Michele Rossi has been the **Principal Investigator** of the MOSAICS project: “MONitoring Sensor and Actuator networks through Integrated Compressive Sensing and data gathering” (G.A. no. CDPA 094077), funded by the University of Padova and whose objective consisted of exploiting Compressive Sensing for the efficient data compression and recovery in Wireless Sensor Networks. Besides actively carrying out scientific research, Michele Rossi has supervised the research activity of Master thesis and two PhD students. **Budget** 45.5 k€.



- **EU SENSEI** Wireless Sensor Networks
European Commission 2008–2010
 - EU SENSEI (integrated FP7 project, G.A. no. 215923, <http://www.ict-sensei.org/>). Michele Rossi has been actively involved in the EU funded SENSEI project: “WSNs as enablers of the future Internet”, where he has been **Task Leader** in Work Package 4.

- **WISE-WAI** Wireless Sensor Networks
Fondazione CaRiPaRo 2007–2011
 - Michele Rossi has also been involved, as a **Senior Researcher**, in the WISE-WAI project: “Wireless Sensor Networks for city-Wide Ambient Intelligence”, on the design of distributed Wireless Sensor Networks, funded by Cariparo (<http://www.fondazionecariparo.it/>).

- **Industrial Collaboration** Distributed Storage and Data Gathering
DOCOMO EuroLabs 2005–2009
 - Michele Rossi has collaborated with the Ubiquitous Networking Research group at DOCOMO EuroLabs (in Munich, Germany, see <http://www.docomoeurolabs.de/>) as a **Senior Researcher** involved in the design of distributed storage and data dissemination schemes for future wireless systems (focusing on the use of Network Coding and Compressive Sensing for the dissemination of information in distributed wireless networks). Michele Rossi coordinated the research at DEI, supervising two PhD students.

- **EU Ambient Networks Phase I and II** Ubiquitous Wireless Networking
European Commission 2002–2007
 - Integrated FP6 projects. He has worked as a **PhD Researcher** in the EU project Ambient Networks phase I (IP on heterogeneous and ubiquitous wireless networking, 2002-2005), and as a **Senior Researcher** in the EU Ambient Networks phase II (2005-2007, **Task Leadership** in WPF).

- **EU e-SENSE** Wireless Sensor Networks
European Commission 2006–2007
 - **PhD Researcher** in the EU FP6 e-SENSE project: “Capturing Ambient Intelligence for Mobile Communications through Wireless Sensor Networks” (Integrated FP6 project, G.A. no. IST-FP6-IP-027227).

- **EU EYES** Wireless Sensor Networks
European Commission 2002–2005
 - **PhD Researcher** in the EYES project (IST-2001-34734) on protocols for energy efficient WSNs, 2002–2005.

- **VICOM** Wireless Sensor Networks
Italian MIUR 2002–2005
 - **PhD Researcher** in the Italian FIRB project funded by MIUR (“Ministero dell’Istruzione, dell’Università e della Ricerca”) within the program “Enabling ICT for the Society of Knowledge”. With this project, Michele Rossi started his research activity on routing and channel access strategies for wireless sensor networks. Part of this research has been carried out at the UCSD in San Diego, where he has been a visiting PhD student.



- **Industrial Collaboration** UMTS networks
ERICSSON AB 2002–2004
 - **PhD Researcher** within the research collaboration between ERICSSON AB (Kista, Stockholm, Sweden) and the Telecommunication Group at the University of Ferrara, Italy. Michele Rossi has been responsible for the technical results on the following topics: 1) TCP/IP header compression algorithms, 2) investigation of hybrid ARQ techniques for the UMTS WCDMA air interface and 3) characterization and optimization of UMTS MBMS services.

- **Industrial Collaboration** TCP/IP over Satellite Networks
European Space Agency (ESA) 2001–2003
 - **PhD Researcher** in the project “Transport Protocol and Resource Management for Mobile Satellite Networks” was partially supported by the European Space Agency (ESA) under contract no. 14956 / 00 / NL / ND. Michele Rossi was actively involved in WP4200, “Performance Evaluation”, designing and implementing a system level protocol simulator, that he subsequently used to characterize the proposed networking solution.

- **RAMON** Multi-technology Access Networks
Italian MIUR 2000–2002
 - **PhD Researcher** in the RAMON project (Reconfigurable Access Module for MOBILE computing Applications). RAMON is an Italian project funded by MIUR (“Ministero dell’Istruzione, dell’Università e della Ricerca”). Six telecommunication groups (Roma La Sapienza, Perugia, Catania, Ferrara, Palermo and Politecnico di Torino) took part in the project, dealing with the design of a wireless access module supporting multiple radio interfaces and, at the same time, minimizing the performance degradation of TCP during handovers performed across different physical layer technologies. Michele Rossi contributed to the design of a network simulator (written in ns2) that included the needed multi-technology support.

COLLABORATIONS

In the last few years, Michele Rossi has collaborated with numerous research centers, universities and industrial partners. Next, we report a representative list of collaborations (in alphabetic order), most of which are ongoing.

- **CEA – Alternative Energies & Atomic Energy Commission** IoT/Mobile Networks
Paris, France Scientific, FP7, Horizon 2020
 - Research on Security suites for IoT [74].
 - Partner in FP7 IoT-A (2010-2013), H2020 SCAVENGE (2016-2019).
 - Writeup of an H2020 FET proposal (ongoing).

- **CERIST – Centre de Recherche sur l’information scientifique et technique** WSN/IoT
Alger, Algérie Scientific, FP7
 - Research on energy harvesting WSN [10].
 - Writeup of a EU ERANETMED proposal (<http://www.eranetmed.eu/>).

- **CTTC** Mobile Networks
Barcelona, Spain Scientific, Horizon 2020
 - Research on energy harvesting mobile networks [16][66].



- Partner in the FP7 SWAP (2010-2014) and H2020 SCAVENGE (2016-2019) projects.

- **IMDEA Networks** Compressive Sensing / mm-Wave
Madrid, Spain *Scientific*
 - Research on Network Coding and Compressive Sensing [26][32][85][89][95].
 - Research on mining mm-Wave channels (ongoing).

- **Imperial College London (ICL)** Mobile Networks
United Kingdom *Horizon 2020*
 - Partner in the H2020 SCAVENGE (2016-2019) project.

- **ECE Dept., Northeastern University** Wireless Sensor Networks
Boston, United States of America *Scientific*
 - Optimal transmission/compression policies for energy harvesting WSN [14].

- **ECE Dept., University of Rochester** Wearable Sensor Networks
Rochester, United States of America *Scientific*
 - Data mining for wearable sensor data (ongoing).

- **Royal Institute of Technology - KTH** Smart Energy Grids
Sweden *Scientific, Horizon 2020*
 - Optimization techniques for Smart Energy Grids [S6].
 - Writeup of H2020 projects on optimization in Smart Grids (H2020-EE-2015-2-RIA).

- **SAMSUNG Advanced Institute of Technology** Wearable IoT Devices
Korea *Scientific*
 - SAMSUNG funded project on signal processing for wearable IoT devices (2015).

- **Smart City Council of Padova** Smart Cities / Wireless Health
Italy *Horizon 2020*
 - Writeup of H2020 projects on IoT and Smart Health (H2020-ICT-30-2015, H2020-PHC-25-2015).

- **Wattics Ltd., Dublin, Ireland** Smart Energy Grids
Dublin, Ireland *Horizon 2020*
 - Writeup of an H2020 project on smart buildings (H2020-EE-2015-2-RIA).
 - Co-organized ACM BuildSys in 2009, 2010 and 2011.

- **WorldSensing** IoT for Smart Cities
Barcelona, Spain *Scientific, FP7, Horizon 2020*
 - Research on WSN and IoT for smart cities [11][18][77].
 - Partner in the FP7 SWAP (2010-2014) and H2020 SCAVENGE (2016-2019) projects.

TEACHING



Michele Rossi started his teaching activity soon after his graduation as a Professor of Computer Programming (C and C++ languages) at the Technical State Institute (ITIS) “Niccolò Copernico” of Ferrara for the academic year 2000/2001. After this, he has been Teaching Assistant for four courses at the University of Ferrara and has been lecturing advanced courses at the Universities of Ferrara and Padova. Further details are given next.

- **Wireless Communications** 9 ECTS (9 CFU)
University of Padova 2016–Current
 - In the academic year 2016/2017, Michele Rossi is the teacher of the course “**Wireless Communications**” (INP6075439), an advanced course offered to the first year Master students of Telecommunications Engineering and Computer Science (S.S.D. 09/F2 and 09/H1) of the University of Padova. The course features **72 hours, 9 ECTS** and is being taught in **English**. Briefly, the course covers channel propagation, link layer designs, channel access and routing in ad hoc networks and wireless sensor networks. Relevant and recent scientific papers from the literature are utilized to complement the technical material from the teacher. A course project is required for the final grading.

- Reti di Telecomunicazioni** 6 ECTS (6 CFU)
University of Padova 2016–Current
 - In the academic year 2016/2017, Michele Rossi is the teacher of the course “**Reti di Telecomunicazioni**” (“Communication Networks”, INP5071838), a course on communication networks offered to the final year Master students of Electrical Engineering of the University of Padova. The course features **48 hours, 6 ECTS**.

- **Wireless Systems and Networks** 9 ECTS (9 CFU)
University of Padova 2012–Current
 - Since academic year 2012/2013, Michele Rossi has been teaching (**four** times) the course “**Wireless Systems and Networks**”, an advanced course offered to the final year Master students of Telecommunications Engineering and Computer Science (S.S.D. 09/F2 and 09/H1) of the University of Padova. The course features **72 hours, 9 ECTS** and is being taught in **English**. Briefly, the course covers the design of channel access, routing and transport protocols in wireless ad hoc networks and wireless sensor networks. Relevant and recent scientific papers from the literature are utilized to complement the technical material from the teacher. A course project is required for the final grading.

- **Sistemi e Reti Wireless** 6 ECTS (6 CFU)
University of Padova 2005–2011
 - From 2005 to 2012, Michele Rossi has been teaching (**six** times) the course “**Sistemi e Reti Wireless**”, an advanced course offered to the final year Master students of Telecommunications Engineering and Computer Science (S.S.D. 09/F2 and 09/H1) of the University of Padova. The course featured **54 hours** and **6 ECTS**.

- **Teoria dei Fenomeni Aleatori** 6 ECTS (6 CFU)
University of Ferrara 2004
 - During the academic year 2004/2005, Michele Rossi has taught the course “**Teoria dei Fenomeni Aleatori**” (“**Stochastic Systems Theory**”) at the University of Ferrara (undergraduate level course, offered to the final year Master students of Electrical Engineering, **54 hours, 6 ECTS**).

- **Wireless Systems II** 6 ECTS (6 CFU)
University of Ferrara 2004



- During the academic year 2004/2005, Michele Rossi has taught the course “**Wireless Systems II**” at the University of Ferrara (undergraduate level course, offered to the final year Master students of Electrical Engineering, **54 hours, 6 ECTS**).

- **Comunicazioni Multimediali II** 6 ECTS (6 CFU)
University of Ferrara 2003
 - During the academic year 2003/2004, Michele Rossi has taught the course “**Comunicazioni Multimediali II**” (**Multimedia Communications II**) at the University of Ferrara (undergraduate level course, offered to the final year Master students of Electrical Engineering, **54 hours, 6 ECTS**). Topics of the course were related to modern communication protocols, with particular emphasis on TCP and its analytical characterization, mathematical modeling of wireless channels, error recovery techniques (e.g., FEC, ARQ and hybrid solutions) and principles of modern communication systems (3G Cellular systems, e.g., UMTS and satellite communications). The course also included a more advanced part, where the lecturer discussed with the students several recent technical papers on multimedia streaming over wired and wireless channels.
- **Elaborazione Numerica dei Segnali** 6 ECTS (6 CFU)
University of Ferrara 2003
 - During the academic year 2003/2004, Michele Rossi has been Teaching Assistant for the course “Elaborazione Numerica dei Segnali” (“Digital Signal Processing”) at the University of Ferrara.
- **Comunicazioni Elettriche** 6 ECTS (6 CFU)
University of Ferrara 2002
 - During the academic year 2002/2003, Michele Rossi has been Teaching Assistant for the course “Comunicazioni Elettriche” (“Digital Communications I”) at the University of Ferrara.
- **Comunicazioni Elettriche I** 6 ECTS (6 CFU)
University of Ferrara 2001
 - During the academic year 2001/2002, Michele Rossi has been Teaching Assistant for the course “Comunicazioni Elettriche I” (“Digital Communications I”) at the University of Ferrara.
- **Computer Programming** 2000
Industrial Technical State Institute (ITIS)
 - From the 20th of March to the 7th of July 2000, Michele Rossi has been a Professor of Computer Programming at the Industrial Technical State Institute (ITIS) “Niccolò Copernico” in Ferrara.

ASSOCIATIONS

- IEEE (Institute of Electrical and Electronics Engineers, <http://www.ieee.org>). Member since first of March, 2002. Awarded the **IEEE Senior Membership** in 2013.
- CNIT (Consorzio Nazionale Interuniversitario per le Telecomunicazioni, <http://www.cnit.it>). Affiliated since 2002.
- GTTI (Associazione Gruppo Telecomunicazioni e Tecnologie dell’Informazione, <http://www.gtti.it>). Affiliated since 2009.



- HIT (Human Inspired Technology Research Centre, <http://hit.psy.unipd.it>). Affiliated since 2013.

SERVICE

- Since August 2011, Michele Rossi has been serving as **Associate Editor of IEEE Transactions on Wireless Communications**, area: "Resource Management and Multiple Access", 2011–2017, (135 papers processed with decision).
- Since 2007, he has been on the TPC of 100+ international conferences and workshops (mostly of the IEEE), for some of which he has been co-organizer (see below).
- In 2012, he has served as international **expert evaluator** of some scientific programs (ICT area) for the Romanian National Council for Scientific Research (executive agency for higher education, research, development and innovation funding).
- In 2014, he has served as an **expert evaluator** for the Italian MIUR "Ministero dell'Istruzione dell'Università e della Ricerca".
- In 2016, he has served as international **expert evaluator** of the scientific program: "Programme 2: increase competitiveness of the Romanian economy through RDI", for the Romanian National Council for Scientific Research (executive agency for higher education, research, development and innovation funding).
- Michele Rossi regularly serves as a reviewer for the following journals: IEEE Transactions on Wireless Communications, IEEE Transactions on Networking, IEEE Transactions on Mobile Computing, ACM Transactions on Sensor Networks, Elsevier Ad Hoc Networks, PLOS ONE.
- Michele Rossi is a **Senior Member of the IEEE**.

Co-organized Scientific Events

- ICST WNS2 2008 (**TPC Co-Chair**): The Second International Workshop on NS-2.
- ACM BuildSys 2009: "ACM Workshop On Embedded Sensing Systems For Energy-Efficiency In Buildings" (**co-organizer**), co-located with ACM SenSys.
- ACM BuildSys 2010: "ACM Workshop On Embedded Sensing Systems For Energy-Efficiency In Buildings" (**co-organizer, steering committee**), co-located with ACM SenSys.
- ACM BuildSys 2011: "ACM Workshop On Embedded Sensing Systems For Energy-Efficiency In Buildings" (**co-organizer, steering committee**), co-located with ACM SenSys.
- IEEE WCNC 2018 (**Track Chair**): special session workshop on "Energy Harvesting and Remotely Powered Communications for Sustainable Future Networks and IoT".
- IoTech 2011 (**general co-chair**): IEEE Workshop on Internet of Things Technology and Architectures. Co-located with IEEE MASS.
- IoTech 2012 (**general co-chair**): IEEE Workshop on Internet of Things Technology and Architectures. Co-located with IEEE MASS.
- ICCCN 2016 (**co-chair of Sensor/Embedded Networks and Pervasive Computing Track**): The International Conference on Computer Communication and Networks (ICCCN 2016).
- Italian Networking Workshop (INW) 2016 (**Co-Organizer and TPC Chair**), San Candido (BZ), Italy.



- Italian Networking Workshop (INW) 2017 (**Co-Organizer** and **TPC Chair**), Falcade (BZ), Italy.

Technical Program Committees

- ACM DroNet 2015 and 2016: ACM Workshop on Micro Aerial Vehicle Networks, Systems, and Applications for Civilian Use. Co-located with ACM MobiSys.
- DCOSS 2010 and 2011: IEEE International Conference on Distributed Computing in Sensor Systems.
- European Wireless: 2014 (**session organizer and chair**), 2015 (TPC member).
- EWSN 2009, 2010 and 2011: European Conference on Wireless Sensor Networks.
- ACM IoTSP 2011: Workshop on Internet of Things and Service Platforms.
- IEEE GLOBECOM (Global Communications Conference): 2009, 2010, 2011, 2012, 2013, 2014 and 2015 (Wireless Networking Symposium), 2010, 2011, 2012, 2013, 2014 and 2015 (Ad Hoc and Sensor Networks Symposium), 2015 and 2016 (Communication QoS, Reliability and Modeling Symposium), 2016, 2017 (Communication QoS, Reliability and Modeling Symposium) and 2018 (Mobile and Wireless Networks Symposium and Communication QoS, Reliability and Modeling Symposium).
- IEEE ICC (International Conference on Communications): 2008, 2009, 2010, 2011, 2012, 2013 and 2014 (Wireless Networking and Ad Hoc and Sensor Networking Symposia), 2016, 2017 (Communications for the Smart Grid), 2017 (Mobile and Wireless Networking), 2018 (Wireless Networking) and ICC 2018 workshop on "Promises and Challenges of Machine Learning in Communication Networks".
- IEEE ICCCN 2008 and 2017: International Conference on Computer Communications and Networks.
- IEEE ICNC 2012: International Conference on Computing, Networking and Communications.
- IEEE INFOCOM 2013, 2014, 2015, 2016, 2017, 2018 and 2019: IEEE International Conference on Computer Communications.
- IEEE IoT-SoS 2012: First IEEE WoWMoM Workshop on the Internet of Things, Smart Objects and Services.
- IEEE IWCMC 2008, 2009 and 2010: IEEE International Wireless Communications and Mobile Computing Conference.
- IEEE LCN 2009 and 2010: IEEE Conference on Local Computer Networks.
- IEEE MADS 2017: IEEE Symposium on Machine Learning and Metaheuristics Techniques and Applications for Dependable Distributed Systems.
- IEEE PIMRC 2012, 2013, 2014, 2015, 2016 and 2017: IEEE Personal Symposium on Personal, Indoor and Mobile Radio Communications.
- IEEE SECON 2009, 2010, 2011, 2013 and 2014: IEEE Conference on Sensor, Mesh and Ad Hoc Communications and Networks (SECON).
- IEEE SmartGridComm 2014, 2015 and 2016: IEEE International Conference on Smart Grid Communications.
- IEEE WCNC 2008, 2013 and 2016: IEEE Wireless Communications and Networking Conference.
- IEEE WONS 2007, 2008, 2013, 2017 and 2018: International Conference on Wireless On-demand Network Systems and Services.
- IEEE WoWMoM 2010 and 2013: IEEE International Symposium on a World of Wireless Mobile and Multi-media Networks.



- IEEE WTS 2009: Wireless Telecommunications Symposium.
- MediaWin 2007, 2008, 2009 and 2010: IEEE Workshop on multiMedia Applications over Wireless Networks.
- Med-Hoc-Net 2018: 17-th Annual Mediterranean Ad Hoc Networking Workshop.
- SENSORNETS 2015: International Conference on Sensor Networks.
- SMARTGREENS 2012: International Conference on Smart Grids and Green IT Systems (SMARTGREENS).
- IFIP Wireless Days 2010, 2011 and 2012.
- ICST WiOpt 2009, 2010, 2011, 2012, 2013 and 2014: Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks.

MAJOR SEMINARS AND TALKS

- “Reconfigurable access module for mobile computing application,” technical presentation of the results obtained within the RAMON project. GTTI Annual Meeting (see <http://www.gtti.it/>), Trieste, 19–21, June 2002.
- “Performance Enhancing Architectures for Satellite Communications,” technical presentation of the results obtained within the project N. 14956/00/NL/ND. ESTEC (ESA), Noordwijk, The Netherlands, 17 September 2002.
- “Link layer solutions to provide efficient multicast streaming services in the UMTS cellular system,” technical presentation of the results obtained within the ERICSSON Research Framework in year 2002. ERICSSON AB, Kista (Stockholm, Sweden), 10 December 2002.
- “Efficient MBMS services provisioning in UMTS,” technical presentation of the results obtained within the ERICSSON Research Framework in year 2002. University of Ferrara, Department of Engineering, 19 December 2003, Ferrara, Italy.
- “Error Control Strategies for wireless Communications: Modeling and Performance Evaluation,” *Technical Seminar*, Faculty of Electrical Engineering, Mathematics and Computer Science (EEMCS, see <http://www.utwente.nl/education/eemcs>), 26 November 2004, University of Twente, The Netherlands.
- “Control Techniques and Algorithms for Wireless Communication Systems: Theory, Examples and Practical Issues,” *Technical Seminar*, Department of Information Engineering, University of Padova, December 2007.
- “SYNAPSE: Code Dissemination in Wireless Sensor Networks using Fountain Codes,” *Technical Seminar*, Department of Information Engineering (<https://www.dei.unipd.it/>), University of Padova, 25 May 2009.
- “Introduction to the IoT-A Communications Model,” Internet of Things Week 2011 (IoT-Week, see <http://www.iot-week.eu/>), 6–9 June 2011, Barcelona, Spain.
- “Protocol Design in Wireless Networks through Dynamic Programming,” *Technical Seminar* held at the Centre Tecnològic de Telecomunicacions de Catalunya (CTTC, see <http://www.cttc.es/>), 7th of May 2011, Barcelona, Spain.
- “Communication Technologies and Architectures for Smart Grids,” *Technical Seminar* held at the Centre Tecnològic de Telecomunicacions de Catalunya (CTTC, see <http://www.cttc.es/>), 18th of April 2012,



Barcelona, Spain.

- “Protocol Design through Stochastic Optimization for Mobile Ad Hoc Networks,” IMDEA Networks (<http://www.networks.imdea.org/>), 24 April 2012, Madrid, Spain.
- “Technologies and Paradigms for the Electrical Grid of the Future,” talk given at ItaliaX10, Teatro Verdi (<http://www.teatroverdi-trieste.com/>), 20 September 2012, Trieste, Italy.
- “Dimensioning Self-Sufficient Networks of Energy Harvesting Embedded Devices,” *Technical Seminar* held at the Centre Tecnològic de Telecomunicacions de Catalunya (CTTC, see <http://www.cttc.es/>), 22nd of May 2013, Barcelona, Spain.
- “Staying Alive: System Design for Self-Sufficient Sensor Networks,” *Technical Seminar* held at WorldSensing (<http://www.worldsensing.com/>), 23rd of May 2014, Barcelona, Spain.
- “The Role of ICT in Smart Micro Grids: communication, control and energy trading,” talk given at the Accademia Galileiana (<http://www.accademiagalileiana.it/>), Sala del Guariento, Reggia Carrarese, 27th of October 2014, Padova, Italy.
- “System Designs for Energy Harvesting Sensor Networks,” *Technical Seminar* held at the Department of Mathematics (<http://www.math.unipd.it/en/>) at the University of Padova, Italy, on the 4th of November 2014.
- “IoT: App Domains, Standards and Way Forward,” Talk given at ETSI (<http://www.etsi.org/>), on the 11th of December 2014, Sophia Antipolis, France. Invited Speech. (“IoT Global landscape and standards convergence”, Closed-door meeting on standardization efforts for IoT featuring the participation of representatives / policy makers from Japan, China, US and the EU. Michele Rossi was invited to present the technical work carried out within the EU IoT-A project).
- “When Telecommunication Networks Meet Energy Grids: Cellular Networks with Energy Harvesting and Trading Capabilities,” Italian Networking Workshop (INW), Cavalese, Italy, January 15, 2015.
- “Boosting Efficiency in Smart Wearable Devices through Biometric Signal Compression,” *Technical Seminar* held at IMDEA Networks, Madrid, September 25, 2015.
- “Data Mining in the IoT era: practical examples and a peek into future developments,” *Invited Speech at the Annual IEEE Joint Joint Chapter Meeting*, 19th of April 2016, Rochester, NY, US.
- “Boosting the efficiency of smart wearable devices for the long term monitoring of vital signs.” *ECE UR Talk*, 20th of April 2016, University of Rochester, NY, US.
- “Data mining and signal processing for IoT: from environmental monitoring to human sensing.” *ECE Colloquium*, 27th of April 2016, Northeastern University, Boston, US.
- “Data Mining in the IoT era: practical examples and a peek into future developments,” Talk given at the Centre Tecnològic de Telecomunicacions de Catalunya (CTTC, see <http://www.cttc.es/>), 22nd of June 2016, Barcelona, Spain.
- “Boosting the efficiency of smart wearable devices for the long term monitoring of vital signs.” Talk given at the Universitat Oberta da Barcelona (UOB) , 23rd of June 2016, Barcelona, Spain.
- “Data mining and signal processing techniques for IoT: two selected examples.” *Technical Seminar* held at WorldSensing (<http://www.worldsensing.com/>), 29th of June 2016, Barcelona, Spain.
- “Data Mining in the IoT era: practical examples and a peek into future developments,” *Invited Speech at the Annual PhD School of Information Engineering*, organized by the Department of Information Engineering,



University of Padova, 8th of July 2016, Brixen (BZ), Italy.

- “EC-CENTRIC: energy and context centric optimization for future IoT networks,” *Invited Speech at the Workshop on Next Generation Wireless*, organized by the Interdisciplinary Science & Engineering Complex (ISEC), 10th of November 2017, Northeastern University, Boston, US.



LIST OF PUBLICATIONS

Submitted Journal Papers:

- [S1] A. F. Gambin, M. Scalabrin, **M. Rossi**, "Online Power Management Strategies for Energy Harvesting Mobile Networks," submitted.
- [S2] M. Scalabrin, G. Bielsa, A. Loch, **M. Rossi**, J. Widmer, "Millimetric Diagnosis: Machine Learning Based Network Analysis for mm-Wave Communication," submitted.

Journal Papers:

- [1] M. Gadaleta, E. Grisan, A. Facchinetti, **M. Rossi**, "Prediction of Adverse Glycemic Events from Continuous Glucose Monitoring Signal," *IEEE Journal of Biomedical and Health Informatics*, Early Access, 2018.
- [2] N. Piovesan, A. F. Gambin, M. Miozzo, **M. Rossi**, P. Dini, "Energy Sustainable Paradigms and Methods for Future Mobile Networks: a Survey," published online, *Elsevier Computer Communications*, Vol. 119, Pages 101-117, April 2018.
- [3] M. Gadaleta, **M. Rossi**, "IDNet: Smartphone-based Gait Recognition with Convolutional Neural Networks," *Elsevier Pattern Recognition*, Vol. 74, Pages 25-37, February 2018.
- [4] T. Dlamini, **M. Rossi**, D. Munaretto, "Softwarization of Mobile Network Functions towards Agile and Energy Efficient 5G Architectures: A Survey," *Wireless Communications and Mobile Computing*, Vol. 2017, Article ID 8618364, 20 November 2017.
- [5] M. Gadaleta, F. Chiariotti, **M. Rossi**, A. Zanella "D-DASH: a Deep Q-learning Framework for DASH Video Streaming," *IEEE Transactions on Cognitive Communications and Networking*, Vol. PP, No. 99, 21 September 2017.
- [6] R. Bonetto, **M. Rossi**, S. Tomasin, C. Fischione, "Joint Optimal Pricing and Electrical Efficiency Enforcement for Rational Agents in Micro Grids," *IEEE Access*, Vol. PP, No. 99, 8 September 2017.
- [7] M. Hooshmand, D. Zordan, T. Melodia, **M. Rossi**, "SURF: Subject-adaptive Unsupervised signal compression for wearable Fitness monitors," *IEEE Access*, Vol. PP, No. 99, 7 September 2017.
- [8] M. Hooshmand, D. Zordan, D. Del Testa, E. Grisan, **M. Rossi**, "Boosting Efficiency in Smart Wearable Devices through Biometric Signal Compression," *IEEE Internet of Things Journal*, Vol. PP, No. 99, March 2017.
- [9] A. Biazon, C. Pielli, **M. Rossi**, A. Zanella, D. Zordan, M. Kelly, and M. Zorzi, "An Energy- and Context-Centric Perspective on IoT Architecture and Protocol Design," *IEEE Access*, Vol. 5, April 2017.
- [10] L. Khelladi, D. Djenouri, **M. Rossi**, N. Badache, "Efficient On-Demand Multi-Node Charging Techniques for Wireless Sensor Networks," *Elsevier Computer Communication*, Vol. 101, March 2017.
- [11] L. Turi, N. Piovesan, E. Toigo, B. Martinez and **M. Rossi**, "Data Analytics for Smart Parking Applications," *MDPI Sensors*, special issue on "Smart City: Vision and Reality", Vol. 16, No. 10, September 2016.
- [12] M. Hooshmand, **M. Rossi**, D. Zordan and M. Zorzi, "Covariogram-based Compressive Sensing for Environmental Wireless Sensor Networks," *IEEE Sensors*, Vol. 16, No. 6, March 2016.
- [13] R. Bonetto, S. Tomasin, **M. Rossi** and M. Zorzi, "On The Interplay of Distributed Power Loss Reduction and Communication in Low Voltage Microgrids," *IEEE Transactions on Industrial Informatics*, Vol. 12, No. 1, February 2016.



- [14] D. Zordan, T. Melodia and **M. Rossi**, "On the Design of Temporal Compression Strategies for Energy Harvesting Sensor Networks," *IEEE Transactions on Wireless Communications*. Vol. 15, No. 2, February 2016.
- [15] D. Del Testa and **M. Rossi**, "Lightweight Lossy Compression of Biometric Patterns via Denoising Autoencoders," *IEEE Signal Processing Letters*, Vol. 22, No. 12, September 2015.
- [16] D. Zordan, M. Miozzo, P. Dini and **M. Rossi**, "When Telecommunication Networks Meet Energy Grids: Cellular Networks with Energy Harvesting and Trading Capabilities," *IEEE Communication Magazine*, Vol. 53, No. 6, June 2015.
- [17] N. Bui and **M. Rossi**, "Staying Alive: System Design for Self-Sufficient Sensor Networks," *ACM Transactions on Sensor Networks*, Vol. 11, No. 3, May 2015.
- [18] D. Zordan, B. Martinez, I. Vilajosana and **M. Rossi**, "On the Performance of Lossy Compression Schemes for Energy Constrained Sensor Networking," *ACM Transactions on Sensor Networks*, Vol. 11, No. 1, November 2014.
- [19] C. Tapparello, O. Simeone and **M. Rossi**, "Dynamic Compression-Transmission for Energy-Harvesting Multihop Networks with Correlated Sources," *IEEE/ACM Transactions on Networking*, Vol. 22, No. 6, December 2014.
- [20] A. P. Castellani, **M. Rossi**, M. Zorzi, "Back Pressure Congestion Control for CoAP/6LoWPAN Networks," *Elsevier Ad Hoc Networks*, Special Issue on "From M2M Communications to the Internet of Things: Opportunities and Challenges", Vol. 18, July 2014, pp: 71–84.
- [21] A. Camilló, M. Nati, C. Petrioli, **M. Rossi** and M. Zorzi, "IRIS: Integrated Data Gathering and Interest Dissemination System for Wireless Sensor Networks," *Elsevier Ad Hoc Networks*, Special Issue on "Cross-Layer Design in Ad Hoc and Sensor Networks". Vol. 11, No. 2, March 2013, pp: 654-671.
- [22] G. Quer, R. Masiero, G. Pillonetto, **M. Rossi** and M. Zorzi, "Sensing, Compression and Recovery for WSNs: Sparse Signal Modeling and Monitoring Framework," *IEEE Transactions on Wireless Communications*, Vol. 11, No. 10, October 2012, pp: 3447-3461.
- [23] **M. Rossi**, C. Tapparello and S. Tomasin, "On Optimal Cooperator Selection Policies for Multi-Hop Ad Hoc Networks," *IEEE Transactions on Wireless Communications*, Vol. 10, No. 2, February 2011, pp: 506-518.
- [24] **M. Rossi**, N. Bui, G. Zanca, L. Stabellini, R. Crepaldi and M. Zorzi, "SYNAPSE++: Code Dissemination in Wireless Sensor Networks using Fountain Codes," *IEEE Transactions on Mobile Computing*, Vol. 9, No. 12, December 2010, pp: 1749-1765.
- [25] N. Baldo, M. Miozzo, F. Guerra, **M. Rossi** and M. Zorzi, "Miracle: the Multi-Interface Cross-layer Extension of ns2," *EURASIP Journal of Wireless Communications and Networking*, Special Issue on Simulators and Experimental Testbeds Design and Development for Wireless Networks, Volume 2010 (2010), Article ID 761792, 16 pages.
- [26] A. Asterjadhi, E. Fasolo, **M. Rossi**, J. Widmer and M. Zorzi, "Toward Network Coding-Based Protocols for Data Broadcasting in Wireless Ad Hoc Networks," *IEEE Transactions on Wireless Communications*, Vol. 9, No. 2, February 2010, pp: 662-673.
- [27] P. Casari, A.P. Castellani, A. Cenedese, C. Lora, **M. Rossi**, L. Schenato and M. Zorzi, "The Wireless Sensor Networks for City-Wide Ambient Intelligence (WISE-WAI) Project," *MDPI Sensors*, Vol. 9, No. 6, May 2009, pp: 4056-4082.
- [28] **M. Rossi**, N. Bui and M. Zorzi, "Cost and Collision Minimizing Forwarding Schemes for Wireless Sensor Networks: Design, Analysis and Experimental Validation," *IEEE Transactions on Mobile Computing*, Vol. 8,



No. 3, March 2009, pp: 322-337.

- [29] L. Badia, N. Bui, M. Miozzo, **M. Rossi** and M. Zorzi, "Improved Resource Management through User Aggregation in Heterogeneous Multiple Access Wireless Networks," *IEEE Transactions on Wireless Communications*, Vol. 7, No. 9, September 2008, pp: 3329-3334.
- [30] **M. Rossi**, L. Badia, P. Giaccon and M. Zorzi, "Energy and Connectivity Performance of Routing Groups in Multi-radio Multi-hop Networks," *Wireless Communications and Mobile Computing Journal*, John Wiley & Sons. Vol. 8, No. 3, March 2008, pp. 327-342.
- [31] **M. Rossi**, R.R. Rao and M. Zorzi, "Statistically assisted routing algorithms (SARA) for hop count based forwarding in wireless sensor networks," *Springer Wireless Networks Journal*, Vol. 14, No. 1, February 2008, pp: 55-70.
- [32] E. Fasolo, **M. Rossi**, J. Widmer and M. Zorzi, "In-Network Aggregation Techniques for Wireless Sensor Networks: A Survey," *IEEE Wireless Communication Magazine*, April 2007, pp: 70-87. **BEST TUTORIAL PAPER AWARD**. See: <http://www.comsoc.org/about/memberprograms/comsoc-awards/best>.
- [33] **M. Rossi** and M. Zorzi, "Integrated Cost-Based MAC and Routing Techniques for Hop Count Forwarding in Wireless Sensor Networks," *IEEE Transactions on Mobile Computing*, Vol. 6, No. 4, April 2007, pp: 434-448.
- [34] L. Badia, M. Miozzo, **M. Rossi** and M. Zorzi, "Routing Schemes in Heterogeneous Wireless Networks Based on Access Advertisement and Backward Utilities for QoS Support," *IEEE Communications Magazine*, Vol. 45, No. 2, February 2007, pp: 67-73.
- [35] S. Dulman, **M. Rossi**, P. Havinga and M. Zorzi, "On the hop count statistics for randomly deployed wireless sensor networks," *International Journal of Sensor Networks (IJSNET)*, Vol. 1, No. 1/2, 2006, pp: 89-102.
- [36] L. Badia, **M. Rossi** and M. Zorzi, "SR ARQ Packet Delay Statistics on Markov Channels in the Presence of Variable Arrival Rate," *IEEE Transactions on Wireless Communications*, Vol. 5, No. 7, July 2006, pp: 1639-1644.
- [37] **M. Rossi**, L. Badia and M. Zorzi, "SRARQ Delay Statistics on N-State Markov Channels with Non-instantaneous feedback," *IEEE Transactions on Wireless Communications*, Vol. 5, No. 6, June 2006, pp:1526-1536.
- [38] **M. Rossi**, F. H.P. Fitzek, M. Zorzi, "Error Control Techniques for Efficient Multicast Streaming in UMTS Networks: Proposals and Performance Evaluation," *IIIS Journal of Systemics, Cybernetics and Informatics*, Vol. 2, No. 3, 2004.
- [39] **M. Rossi**, L. Badia, M. Zorzi, "On the Delay Statistics of SR-ARQ over Markov Channels with Finite Round-Trip Delay," *IEEE Transactions on Wireless Communications*, Vol. 4, No. 4, July 2005, pp: 1858-1868.
- [40] **M. Rossi**, R. Vicenzi, M. Zorzi, "Accurate Analysis of TCP on Channels with Memory and Finite Round-Trip Delay," *IEEE Transactions on Wireless Communications*, Vol. 3, No., 2, March 2004. pp: 627-640.
- [41] C.F. Chiasserini, F. Cuomo, L. Piacentini, **M. Rossi**, I. Tinnirello, F. Vacirca, "Architectures and Protocols for Mobile Computing Applications: A Reconfigurable Approach," *IEEE Computer Networks*, Vol. 44, No. 4, March 2004. pp: 545-567.
- [42] M. Marchese, **M. Rossi**, G. Morabito, "Performance Enhancing Architecture for Satellite Communications," *IEEE Journal on Selected Areas in Communications (JSAC). Special Issue on Broadband IP Networks via Satellites*. Vol. 22, No. 2, February 2004, pp: 320-332.
- [43] **M. Rossi**, M. Zorzi, "Analysis and Heuristics for the Characterization of Selective Repeat ARQ Statistics over Wireless Channels," *IEEE Transactions on Vehicular Technology*. Vol. 52, No. 5, September 2003. pp: 1365-1377.



- [44] M. Zorzi, **M. Rossi**, G. Mazzini, “Throughput and Energy Performance of TCP on a Wideband CDMA air interface,” *Wireless Communications and Mobile Computing (WCMC)*, vol. 2, No. 1, February 2002. John Wiley & Sons. pp: 71–84.
- [45] A. Giovanardi, G. Mazzini, **M. Rossi**, M. Zorzi, “Improved Header Compression for TCP/IP over Wireless Links,” *IEEE Electronic Letters*, Vol. 36, No. 23, November 2000, pp: 1958–1960.

Newsletters:

- [46] **M. Rossi**, A. Bassi, F. Carrez, M. Zorzi, Ad Hoc and Sensor Networks Technical Committee (AHSN TC) Newsletter: “The EU IoT-A Project - Toward a Common Language for the Internet of Things,” *IEEE Communications Society*, Vol. 1, No. 6, June, 2014.

Book Chapters:

- [47] R. Bonetto, **M. Rossi**, “Smart Grid for the Smart City,” book chapter in: “Designing, Developing, and Facilitating Smart Cities”, Ed. Angelakis, Tragos, Kapovits, Pöhls, and Bassi. Springer International Publishing, Switzerland, November 6, 2016. ISBN-13: 978-3-319-44922-7.
- [48] N. Bui, **M. Rossi** and M. Zorzi, “Networking Technologies for Smart Grid,” book chapter in: “IEEE Smart Grid Research: IEEE Vision for Smart Grid Communications: 2030 and Beyond”, Ed. Sanjay Goel, Stephen E. Bush and Dave Bakken. IEEE Communications Society 2013. IEEE 3 Park Avenue New York, NY 10016-5997 US.
- [49] N. Bui, A. P. Castellani, P. Casari, **M. Rossi**, L. Vangelista and M. Zorzi, “Implementation and Performance Evaluation of Wireless Sensor Networks for Smart Grid,” Book Chapter in E. Hossain, Z. Han, and H. V. Poor, *Smart Grid Communications and Networks*, (edited volume), Cambridge University Press, ISBN-13: 978-1107014138, June 30, 2012.
- [50] **M. Rossi**, “Data Link Layer,” book chapter in: *Principles of Communications Networks and Systems*. Ed. N. Benvenuto and M. Zorzi. John Wiley and Sons Ltd. November 15, 2011. ISBN-13: 978-0470744314. (105 pages)

Conference Papers:

- [51] M. Scalabrin, N. Michelusi, **M. Rossi**, “Beam Training and Data Transmission Optimization in mm-Wave Vehicular Networks,” ICC 2018 Workshops-N2Women/WICE, Kansas City, US, May 2018.
- [52] A. F. Gambin, E. Gindullina, L. Badia, **M. Rossi**, “Energy Cooperation for Sustainable IoT Services within Smart Cities,” IEEE WCNC 2018, Barcelona, Spain, 15-18 April, 2018.
- [53] M. Scalabrin, M. Gadaleta, R. Bonetto, **M. Rossi**, “A Bayesian Forecasting and Anomaly Detection Framework for Vehicular Monitoring Networks,” *IEEE Machine Learning for Signal Processing Workshop (MLSP) 2017*, Roppongi, Tokio, Japan, September 25-28, 2017.
- [54] A. F. Gambin, **M. Rossi**, “Energy Cooperation for Sustainable Base Station Deployments: Principles and Algorithms,” *IEEE Global Communications Conference (GLOBECOM) 2017*, Singapore, 4-8 December, 2017. **AWARD for the BEST PAPER of the Green Communications Systems and Networks Symposium**
- [55] D. Zordan, R. Parada, **M. Rossi**, M. Zorzi, “Automatic Rate-Distortion Classification for the IoT: Towards Signal-Adaptive Network Protocols,” *IEEE Global Communications Conference (GLOBECOM) 2017*, Singapore, 4-8 December, 2017.



- [56] M. Scalabrin, **M. Rossi**, G. Bielsa, A. Loch, J. Widmer, "Millimetric Diagnosis: Machine Learning Based Network Analysis for mm-Wave Communication," *IEEE World of Wireless Mobile and Multimedia Networks (WoWMoM)*, Macau, China, June 12-15, 2017.
- [57] L. Bonati, A. F. Gambin, **M. Rossi**, "Wireless Power Transfer under the Spotlight: Charging Terminals amid Dense Cellular Networks," *IEEE World of Wireless Mobile and Multimedia Networks (WoWMoM)*, Macau, China, June 12-15, 2017.
- [58] D. Zordan, **M. Rossi**, M. Zorzi, "Rate-Distortion Classification for Self-Tuning IoT Networks." *IEEE ICC 2017 (IEEE ICC-WT04: 5th IEEE International Workshop on Smart Communication Protocols and Algorithms)*, Paris, France, 21-25 May 2017.
- [59] M. Miozzo, L. Giupponi, **M. Rossi**, P. Dini, "Switch-On/Off Policies for Energy Harvesting Small Cells through Distributed Q-Learning," *IEEE WCNC 2017 (IEEE WCNC Workshop on Green and Sustainable 5G Wireless Networks (GRASNET 2))*, San Francisco, CA US, 19-22 March 2017.
- [60] M. Centenaro, **M. Rossi**, M. Zorzi "Joint Optimization of Lossy Compression and Transport in Wireless Sensor Networks," *IEEE GLOBECOM Workshop on Low-Layer Implementation and Protocol Design for IoT Applications (IEEE GLOBECOM 2016)*, Washington DC, US, 4-8 December 2016.
- [61] R. Bonetto, **M. Rossi**, "Parallel Multi-Step Ahead Power Demand Forecasting through NAR Neural Networks," *IEEE International Conference on Smart Grid Communications (SmartGridComm 2016)*, November 6-9, Sydney, Australia, 2016.
- [62] V. Vadori, E. Grisan, **M. Rossi**, "Biomedical Signal Compression With Time- And Subject-Adaptive Dictionary For Wearable Devices," *IEEE International Workshop on Machine Learning for Signal Processing (MLSP 2016)*, Sept. 13-16, Vietri sul Mare, Salerno, Italy, 2016.
- [63] M. Gadaleta, L. Merelli, **M. Rossi**, "Human Authentication From Ankle Motion Data Using Convolutional Neural Networks," *IEEE Statistical Signal Processing Workshop (SSP 2016)*, June 26-29, Palma de Maiorca, Spain, 2016.
- [64] E. Grisan, G. Cantisani, G. Tarroni, S. K. Yoon and **M. Rossi**, "A supervised learning approach for robust detection of heart beat in plethysmographic data," *IEEE Engineering in Medicine and Biology Society (EMBS)*, August 25-29, Milan, Italy, 2015.
- [65] R. Francescon, M. Hooshmand, M. Gadaleta, E. Grisan, S. K. Yoon and **M. Rossi**, "Toward Lightweight Biometric Signal Processing for Wearable Devices," *IEEE Engineering in Medicine and Biology Society (EMBS)*, August 25-29, Milan, Italy, 2015.
- [66] M. Miozzo, L. Giupponi, **M. Rossi**, P. Dini, "Distributed Q-Learning for Energy Harvesting Heterogeneous Networks". *IEEE ICC Workshop on Green Communications and Networks with Energy Harvesting, Smart Grids, and Renewable Energies*. June 8-12, London, UK, 2015.
- [67] R. Bonetto, T. Caldognetto, S. Buso, **M. Rossi**, S. Tomasin, P. Tenti, "Lightweight Energy Management of Islanded Operated Microgrids for Prosumer Communities". *IEEE International Conference on Industrial Technology (ICIT 2015)*. March 17-19, Seville, Spain, 2015.
- [68] R. Bonetto, S. Tomasin and **M. Rossi**, "When Order Matters: Communication Scheduling for Current Injection Control in Micro Grids," *IEEE PES Conference on Innovative Smart Grid Technologies*. February 17-20, Washington DC, US, 2015.
- [69] **M. Rossi**, M. Hooshmand, D. Zordan and M. Zorzi "Toward Practical Distributed Compression for Spatio-Temporal WSN Signals," *IEEE International Conference on Computing, Networking and Communications (ICNC 2015)*. February 16-19, Anaheim, California, US, 2015.



- [70] M. Miozzo, D. Zordan, P. Dini and **M. Rossi**, "SolarStat: Modeling Photovoltaic Sources through Stochastic Markov Processes," *IEEE Energy Conference (ENERGYCON 2014)*. May 13-16, Dubrovnik, Croatia, 2014.
- [71] N. Bui and **M. Rossi**, "Dimensioning Self-sufficient Networks of Energy Harvesting Embedded Devices," *International Workshop on Wireless Access Flexibility (WiFlex 2013)*. September 4-6, Kaliningrad, Russia, 2013.
- [72] D. Altolini, V. Lakkundi, N. Bui, C. Tapparello and **M. Rossi**, "Low Power Link Layer Security for IoT: Implementation and Performance Analysis," *IEEE IWCMC 2013*. June 1-5, Cagliari, Sardinia, Italy, 2013.
- [73] M. Mezzavilla, M. Miozzo, **M. Rossi**, N. Baldo and M. Zorzi, "A Lightweight and Accurate Link Abstraction Model for System-Level Simulation of LTE Networks in ns-3," *ACM MSWIM 2012*. October 21-25, Paphos, Cyprus Island, 2012.
- [74] R. Bonetto, N. Bui, V. Lakkundi, A. Olivereau, A. Serbanati and **M. Rossi**, "Secure Communication for Smart IoT Objects: Protocol Stacks, Use Cases and Practical Examples," *IEEE IoT-SoS 2012*. June 25, San Francisco, CA, US, 2012.
- [75] R. Bonetto, N. Bui, **M. Rossi** and M. Zorzi, "McMAC: a power efficient, short preamble Multi-Channel Medium Access Control protocol for wireless sensor networks," *WNS3 2012, International Workshop on NS3*. March 23, Sirmione, Italy, 2012.
- [76] C. Tapparello, S. Tomasin and **M. Rossi**, "Online Policies for Opportunistic Virtual MISO Routing in Wireless Ad Hoc Networks," *IEEE WCNC 2012*. 1-4 April, Paris, France, 2012.
- [77] N. Bui, A. Georgiadis, **M. Rossi**, I. Vilajosana, "SWAP Project: Beyond the State of the Art on Harvested Energy-Powered Wireless Sensors Platform Design," *IEEE IoTech 2011*. 17 October, Valencia, Spain, 2011.
- [78] D. Zordan, G. Quer, M. Zorzi and **M. Rossi**, "Modeling and Generation of Space-Time Correlated Signals for Sensor Network Fields," *IEEE GLOBECOM 2011*. 5-9 December, Houston, Texas, US, 2011.
- [79] C. Tapparello, D. Chiarotto, **M. Rossi**, O. Simeone and M. Zorzi, "Spectrum Leasing via Cooperative Opportunistic Routing in Distributed Ad Hoc Networks: Optimal and Heuristic Policies," *Asilomar Conference on Signals Systems and Computers*. 6-9 November, Pacific Grove, CA, US, 2011.
- [80] A.P. Castellani, M. Gheda, N. Bui, **M. Rossi** and M. Zorzi, "Web Services for the Internet of Things through CoAP and EXI," *IEEE ICC 2011 Workshop on Embedding the Real World into the Future Internet (RWWFI 2011)*. 5-9 June, Kyoto, Japan, 2011.
- [81] C. Tapparello, S. Tomasin and **M. Rossi**, "On Interference-Aware Cooperation Policies for Wireless Ad Hoc Networks," *International IEEE Conference on Ultra Modern Telecommunications (ICUMT 2010)*. 18-20 October, Moscow, Russia, 2010.
- [82] G. Quer, D. Zordan, R. Masiero, M. Zorzi and **M. Rossi**, "WSN-Control: Signal Reconstruction through Compressive Sensing in Wireless Sensor Networks," *IEEE International Workshop on Practical Issues in Building Sensor Network Applications (SenseApp 2010)*. 11-14 October, Denver, Colorado, US, 2010.
- [83] N. Bui, M. Dissegna, **M. Rossi**, O. Ugus and M. Zorzi, "An Integrated System for Secure Code Distribution in Wireless Sensor Networks," *IEEE PerCom Workshop on Pervasive Wireless Networking (PWN 2010)*. April 2, Mannheim, Germany, 2010.
- [84] A.P. Castellani, N. Bui, P. Casari, **M. Rossi**, Z. Shelby and M. Zorzi, "Architecture and Protocols for the Internet of Things: A Case Study," *First International Workshop on the Web of Things (WoT 2010)*. March 29-April 2, Mannheim, Germany, 2010.



- [85] R. Masiero, G. Quer, D. Munaretto, **M. Rossi**, J. Widmer and M. Zorzi, "Data Acquisition through joint Compressive Sensing and Principal Component Analysis," *IEEE GLOBECOM 2009*. November 30-December 4, Honolulu, Hawaii, US, 2009.
- [86] R. Masiero, G. Quer, **M. Rossi** and M. Zorzi, "A Bayesian Analysis of Compressive Sensing Data Recovery in Wireless Sensor Networks," *IEEE SASN 2009*. October 12-14, Saint Petersburg, Russia, 2009.
- [87] M. Miozzo and **M. Rossi**, "Heterogeneous Routing and Composition in Ambient Networking, International Workshop on Cross-Layer Design," *IEEE IWCLD 2009*. June 11-12, Palma de Mallorca, Spain, 2009.
- [88] R. Masiero, D. Munaretto, **M. Rossi**, J. Widmer and M. Zorzi, "A Note on the Buffer Overlap Among Nodes Performing Random Network Coding in Wireless Ad Hoc Networks," *IEEE VTC-Spring 2009*. April 26-29, Barcelona, Spain, 2009.
- [89] G. Quer, R. Masiero, D. Munaretto, **M. Rossi**, J. Widmer and M. Zorzi, "On the Interplay Between Routing and Signal Representation for Compressive Sensing in Wireless Sensor Networks," *Workshop on Information Theory and Applications (ITA 2009)*. February 8-13, San Diego, CA, US, 2009.
- [90] P. Casari, **M. Rossi** and M. Zorzi, "Fountain Codes and their Application to Broadcasting in Underwater Networks: Performance Modeling and Relevant Tradeoffs," *ACM WUWNet 2008*. September 5, San Francisco, CA, US, 2008.
- [91] **M. Rossi**, G. Zanca, L. Stabellini, R. Crepaldi, A.F. Harris III, and M. Zorzi, "SYNAPSE: A Network Reprogramming Protocol for Wireless Sensor Networks using Fountain Codes," *IEEE SECON 2008*. June 16-20, San Francisco, California, US, 2008.
- [92] M. Miozzo, **M. Rossi** and M. Zorzi, "Architectures for Seamless Handover Support in Heterogeneous Wireless Networks," *IEEE WCNC 2008*. Mar. 31-Apr. 3, Las Vegas, Nevada, US, 2008.
- [93] D. Munaretto, J. Widmer, **M. Rossi** and M. Zorzi, "Resilient Coding Algorithms for Sensor Network Data Persistence," *EWSN 2008*. January 30-February 1, Bologna, Italy, 2008. (Also published in the Springer Lecture Notes in Computer Science (LNCS), Vol. 4913/2008)
- [94] P. Casari, **M. Rossi** and M. Zorzi, "Towards Optimal Broadcasting Policies for HARQ based on Fountain Codes in Underwater Networks," *IEEE WONS 2008*. January 23-25, Garmisch-Partenkirchen, Germany, 2008.
- [95] E. Fasolo, **M. Rossi**, J. Widmer and M. Zorzi, "A Proactive Network Coding Strategy for Pervasive Wireless Networking," *IEEE GLOBECOM 2007*. November 26-30, Washington, DC, US, 2007.
- [96] L. Badia, N. Bui, M. Miozzo, **M. Rossi** and M. Zorzi, "Mobility Aided Routing in Multi-hop Heterogeneous Networks with Group Mobility," *IEEE GLOBECOM 2007*. November 26-30, Washington, DC, US, 2007. **BEST PAPER AWARD.**
- [97] A.F. Harris III, M. Miozzo, **M. Rossi** and M. Zorzi, "Performance Improvements in Ad Hoc Networks Through Mobility Groups and Channel Diversity," *WICON 2007*. October 22-24, Austin, Texas, US, 2007.
- [98] N. Baldo, F. Maguolo, M. Miozzo, **M. Rossi** and M. Zorzi, "ns2-MIRACLE: a Modular Framework for Multi-Technology and Cross-Layer Support in Network Simulator 2," *ACM NSTools 2007*. October 22, Nantes, France, 2007.
- [99] E. Fasolo, **M. Rossi**, J. Widmer and M. Zorzi, "On MAC Scheduling and Packet Combination Strategies for Practical Random Network Coding," *IEEE ICC 2007*. June 24-28, Glasgow, Scotland, UK, 2007.



- [100] R. Crepaldi, S. Friso, A.F. Harris III, M. Mastrogiovanni, C. Petrioli, **M. Rossi**, A. Zanella and M. Zorzi, "The Design, Deployment, and Analysis of SignetLab: A Sensor Network Testbed and Interactive Management Tool," *IEEE Tridentcom 2007*. May 21-23, Orlando, Florida, US, 2007.
- [101] **M. Rossi**, N. Bui and M. Zorzi, "Cost and Collision Minimizing Forwarding Schemes for Wireless Sensor Networks," *IEEE INFOCOM 2007*. May 6-12, Anchorage, Alaska, US, 2007.
- [102] D. Munaretto, J. Widmer, **M. Rossi** and M. Zorzi, "Network Coding Strategies for Data Persistence in Static and Mobile Sensor Networks," *International Workshop on Wireless Networks: Communication, Cooperation and Competition (WNC³ 2007)*. April 16, Limassol, Cyprus, 2007.
- [103] M. Mastrogiovanni, C. Petrioli, **M. Rossi**, A. Vitaletti and M. Zorzi, "Integrated Data Delivery and Interest Dissemination Techniques for Wireless Sensor Networks," *IEEE GLOBECOM 2006*. November 27-December 1, San Francisco, CA, US, 2006.
- [104] M. Miozzo, **M. Rossi** and M. Zorzi, "Routing Strategies for Coverage Extension in Heterogeneous Wireless Networks," *IEEE PIMRC 2006*. September 11-14, Helsinki, Finland, 2006.
- [105] L. Badia, N. Bui, M. Miozzo, **M. Rossi** and M. Zorzi, "On the Exploitation of User Aggregation Strategies in Heterogeneous Wireless Networks," *IEEE CAMAD 2006*. June 8-9, Trento, Italy, 2006. **BEST PAPER AWARD**.
- [106] E. Fasolo, C. Prehofer, **M. Rossi**, Q. Wei, J. Widmer, A. Zanella and M. Zorzi, "Challenges and new approaches for efficient data gathering and dissemination in pervasive wireless networks," *InterSense 2006*. May 30-31, Nice, France, 2006.
- [107] **M. Rossi**, R.R. Rao and M. Zorzi, "Cost Efficient Routing Strategies over Virtual Coordinates for Wireless Sensor Networks," *IEEE GLOBECOM 2005*. November 20-December 2, St. Louis, MO, US, 2005.
- [108] L. Badia, **M. Rossi** and M. Zorzi, "Queueing and Delivery Analysis of SR ARQ on Markov Channels with Non-instantaneous Feedback," *IEEE GLOBECOM 2005*. November 20-December 2, St. Louis, MO, US, 2005.
- [109] **M. Rossi**, L. Badia, N. Bui and M. Zorzi, "On Group Mobility Patterns and their Exploitation to Logically Aggregate Terminals in Wireless Networks," *IEEE VTC-Fall 2005*. September 25-28, Dallas, Texas, US, 2005.
- [110] S. Blom, C. Bellettini, A. Sinigalliesi, L. Stabellini, **M. Rossi** and G. Mazzini, "Transmission Power Measurements for Wireless Sensor Nodes and their Relationship to the Battery Level," *IEEE ISWCS 2005*. September 5-7, Siena, Italy, 2005.
- [111] L. Badia, **M. Rossi** and M. Zorzi, "On the Statistics of Delay Terms in SR ARQ on Markov Channels," *IEEE ISWCS 2005*. September 5-7, Siena, Italy, 2005.
- [112] **M. Rossi** and M. Zorzi, "Probabilistic Algorithms for Cost-based Integrated MAC and Routing in Wireless Sensor Networks," *International Workshop on Measurement, Modeling, and Performance Analysis of Wireless Sensor Networks (SenMetrics 2005)*. July 21, San Diego, CA, US, 2005.
- [113] **M. Rossi** and M. Zorzi, "Cost Efficient Localized Geographical Forwarding Strategies for Wireless Sensor Networks," *Tyrrhenian International Workshop on Digital Communications (TIWDC 2005)*. July 4-6, Sorrento, Italy, 2005. (Also published in the book: "Distributed Cooperative Laboratories: Networking, Instrumentation and Measurements," Springer 2006. F. Davoli, S. Palazzo, S. Zappatore (Eds.))
- [114] **M. Rossi**, L. Badia, P. Giacomini and M. Zorzi, "On the Effectiveness of Logical Device Aggregation in Multi-radio Multi-hop Networks," *IEEE MobiWac 2005*. June 13-16, Maui, Hawaii, US, 2005. **BEST PAPER AWARD**.
- [115] A. Surtees, R. Aguero, J. Tenhunen, **M. Rossi** and D. Hollos, "Routing Group Formation in Ambient Networks," *14th IST Mobile & Wireless Communications Summit*. June 19-23, Dresden, Germany, 2005.



- [116] N. Baldo, A. Odorizzi and **M. Rossi**, "Buffer Control Strategies for the Transmission of TCP Flows over Geostationary Satellite Links Using Proxy-Based Architectures," *IEEE VTC-Spring 2005*. May 30-June 1, Stockholm, Sweden, 2005.
- [117] **M. Rossi**, P. Casari, M. Levorato and M. Zorzi, "Multicast Streaming over 3G Cellular Networks through Multi-Channel Transmissions: Proposals and Performance Evaluation," *IEEE WCNC 2005*. March 13-17, New Orleans, Louisiana, US, 2005.
- [118] **M. Rossi**, L. Badia and M. Zorzi, "SR-ARQ Delay Statistics on N-State Markov Channels with finite Round Trip Delay," *IEEE GLOBECOM 2004*. November 29-December 3, Dallas, Texas, US, 2004.
- [119] **M. Rossi**, M. Zorzi and F. H.P. Fitzek, "Link Layer Algorithms for Efficient Multicast Service Provisioning in 3G Cellular Systems," *IEEE GLOBECOM 2004*. November 29-December 3, Dallas, Texas, US, 2004.
- [120] **M. Rossi**, M. Zorzi, F. Fitzek, "Investigation of Link Layer Algorithms and Play-Out Buffer Requirements for Efficient Multicast Services in 3G Cellular Systems," *IEEE PIMRC 2004*. September 5-8, Barcelona, Spain, 2004.
- [121] **M. Rossi**, L. Badia, M. Zorzi, "Exact Statistics of ARQ Packet Delivery Delay over Markov Channels with Finite Round-Trip Delay," *IEEE GLOBECOM 2003*. December 1-5, San Francisco, CA, US, 2003.
- [122] **M. Rossi**, L. Scaranari, M. Zorzi, "On the UMTS RLC Parameters Setting and their Impact on Higher Layers Performance," *IEEE VTC-Fall 2003*. October 6-9, Orlando, FL, US, 2003.
- [123] **M. Rossi**, F. Fitzek, M. Zorzi, "Error Control Techniques for Efficient Multicast Streaming in UMTS Networks," *SCI 2003*, July 27-30, Orlando, FL, US, 2003.
- [124] **M. Rossi**, M. Zorzi, "An Accurate Heuristic Approach for UMTS RLC Delay Statistics Evaluation," *IEEE VTC-Spring 2003*. April 22-25, Jeju, Korea, 2003.
- [125] **M. Rossi**, L. Badia, M. Zorzi, "Accurate Approximation of ARQ Packet Delay Statistics over Markov Channels with Finite Round-Trip Delay," *IEEE WCNC 2003*. March 16-20, New Orleans, Louisiana, US, 2003.
- [126] **M. Rossi**, L. Badia, M. Zorzi, "On the Delay Statistics of an Aggregate of SR-ARQ Packets over Markov Channels with Finite Round-Trip Delay," *IEEE WCNC 2003*. March 16-20, New Orleans, Louisiana, US, 2003.
- [127] G. Morabito, S. Palazzo, **M. Rossi**, M. Zorzi, "Improving End-To-End Performance in Reconfigurable Networks through Dynamic Setting of TCP Parameters," *2nd International Workshop on QoS in Multiservice IP Networks (QoS-IP 2003)*. February 24-26, Milan, Italy, 2003.
- [128] A. Roveri, C.F. Chiasserini, M. Femminella, T. Melodia, G. Morabito, **M. Rossi**, I. Tinnirello, "The RAMON Module: Architecture Framework and Performance Results," *2nd International Workshop on QoS in Multiservice IP Networks (QoS-IP 2003)*. February 24-26, Milan, Italy, 2003.
- [129] D. Adami, M. Marchese, G. Morabito, **M. Rossi**, L. Veltri, "Transport Protocol and Resource Management for Satellite Networks: Framework of a Project," *5th European Workshop on Mobile/Personal Satcoms (EMPS 2002)*. 25-26 September, Baveno-Stresa, Lake Maggiore, Italy, 2002.
- [130] A. Giovanardi, G. Mazzini, **M. Rossi**, "Analysis and Optimization of a Transparent Multicast Mobility Support in Cellular Systems," *IEEE ICC 2002*. April 28-May 2, New York, USA, 2002.
- [131] **M. Rossi**, A. Giovanardi, M. Zorzi, G. Mazzini, "TCP/IP Header Compression: Proposal and Performance Investigation on a WCDMA Air Interface," *IEEE PIMRC 2001*. September 30-October 3, San Diego, USA, 2001.



- [132] M. Zorzi, **M. Rossi**, G. Mazzini, "Performance of TCP on a Wideband CDMA Air Interface," *IWDC 2001: Evolutionary Trends of the Internet*. September 17-20, Taormina, Italy, 2001.
- [133] A. Giovanardi, G. Mazzini, **M. Rossi**, "An Agent-Based Approach for Multicast Applications in Mobile Wireless Networks," *IEEE GLOBECOM 2000*. November 27-December 1, San Francisco, CA, US, 2000.

Patents:

- [134] E. Fasolo, D. Munaretto, **M. Rossi** and J. Widmer, "Method and Apparatus for Operating a Wireless Network for Gathering Data: a Centralized Approach," Joint invention with DoCoMo Euro-Labs. Application granted on the 17th of March 2010. European patent no. EP2071774.
- [135] E. Fasolo, D. Munaretto, **M. Rossi** and J. Widmer, "Method and Apparatus for Operating a Wireless Network for Gathering Data: a Distributed Approach," Joint invention with DoCoMo Euro-Labs. Application granted on the 27th of October 2011. European patent no. EP2071779.

Demos:

- [136] N. Bui, C. Tapparello, **M. Rossi** and M. Zorzi, "Reprogramming over the Air and Sensor Island Management through SYNAPSE++," *Demo Abstract, IEEE SECON*. June 22-26, 2009, Rome, Italy.
- [137] R. Crepaldi, A.F Harris III, **M. Rossi**, G. Zanca and M. Zorzi, "Fountain Reprogramming Protocol: a Reliable Data Dissemination Scheme for Wireless Sensor Networks Using Fountain Codes," *Demo Abstract, ACM SenSys*. November 6-9, 2007, Sydney, Australia.
- [138] M. Mastrogiovanni, C. Petrioli, **M. Rossi** and M. Zorzi, "Integrated and Dynamically Adaptable Interest Dissemination and Convergecasting Algorithms for Wireless Sensor Networks," *Demo Abstract, IEEE SECON*. September 25-28, 2006, Reston, VA, US.

Posters:

- [139] M. Mastrogiovanni, C. Petrioli, **M. Rossi** and M. Zorzi, "Towards Integrated and Self-configuring Routing and Interest Dissemination Strategies for Wireless Sensor Networks," *Poster Abstract, ACM MobiHoc*. May 22-25, 2006, Firenze, Italy.
- [140] **M. Rossi**, R.R. Rao and M. Zorzi, "Cost Efficient On-line Hop Count Routing for Wireless Sensor Networks," *Poster Abstract, ACM MobiHoc*. May 25-28, 2005, Urbana Champaign, IL, US.