

[Alberto Gotta, IEEE and ComSoc Member n. 91233990.](#)

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Wireless Networks Laboratory (WN-LAB)

CNR - National Research Council

ISTI - Information Science and Technologies Institute "Alessandro Faedo"

CNIT - National Inter-University Consortium for Telecommunications,
IIT/ISTI-CNR Research Unit

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POSITION STATEMENT

I have been doing research for more than 20 years on satellite communications and networking and, more recently, on IoT and Aerial Networks. I've participated in the SSC TC meetings since 2019, and I would like to be more deeply involved in the activities of the ComSoc, by applying for the position of Secretary in the SSC-TC, dealing with the organizations of initiatives, panels, symposia, special issues, etc., related to Satellite and Non-Terrestrial Networks. As a personal motivation for my research interests, I am particularly fascinated by the intersection between aerial and satellite networks to foster a computational and networking continuum between ground and space segments foreseeing to a 3D evolution of the future Internet. I have submitted papers to ComSoc's flagship conferences, magazines, and journals every year in the last decade, achieving a published article almost every time, which can be confirmed by my google scholar profile.

SHORT BIO

Alberto Gotta achieved a master's degree in Telecommunications Engineering in 2002 with a maximum score of 110/110 and was qualified as a chartered engineer in 2003. From 2002 to 2004, he worked as a Researcher at the Interuniversity National Consortium for Telecommunications (CNIT) at the University of Genoa research unit. He was involved in studies on optimal allocation strategies and network design for geostationary satellite communications. He participated in the ASI I/R/1797/01 ASI ACE, ASI I/R/226/06, Labnet, and IS-MANET research projects.

In mid-2004, he moved to Pisa, joining the Wireless Network Laboratory of the Institute of Information Science and Technologies (ISTI) of the National Research Council (CNR) with a fellowship from 2004 to 2005.

In 2005 he won a PhD Grant at the University of Genoa in Science and Information and Communications Technologies. He obtained his PhD in April 2008 with a thesis entitled: "Quality of Service and Bandwidth Allocation in GEO Satellite Networks: Optimization and Cross-layer Design".

In mid-2005, he won a fellowship at the University of Genoa under the supervision of Prof. Franco Davoli, at DIST-UNIGE (Department of Informatics, Systems and Telematics, University of Genoa), nowadays DITEN (Department of Marine, Electrical, Electronic and Telecommunications Engineering). During this period, he spent almost a year at the CNR laboratories in PISA within the framework of the EU SatNEx IST Project n. 507052 for developing an experimental platform for hybrid Satellite and MANET terrestrial networks and for the development of an experimental campaign to detect the performance of satellite/wireless variants of the TCP protocol. As part of this activity, he was formally commissioned by the CNIT to carry out the measurement campaign.

In mid-2006, he won a fellowship at the CNR-ISTI in Pisa. He moved and started his research activities on satellite communications and networking within the UE SatNEx IST Project n. 507052 FP6-ICT SatNEx II Project n. 027393.

During this period, he took part in the experimental campaign VOTOS - Focus Topic in the Joint Activity 2410 (Access, Network and Transport Layer Trials) of the European Satellite Communications Network of Excellence, dealing with the analysis of the behaviour of congestion control protocols on satellite networks, with particular focus on those systems adopting the latest Demand Assignment Multiple Access schemes, such as Skyplex Data, Amerhis, BGAN, etc. He developed a simulator (TDMA-DAMA) and the validation of TCP start-up with satellite Bandwidth on Demand systems through field experimentations on the satellite hardware SKYPLEX.

In mid-2010, Alberto Gotta won a temporary research position as a staff member at CNR.

At the end of 2011, he won a competitive entrance examination for a permanent position at CNR as a researcher, and in January 2012, he joined as permanent staff.

Since October 2015, he has been the manager of the research branch "Communication Protocols" of the Wireless Networks Laboratory.

From April 2019 to December 2019, he has been a member of the CNR-ISTI advisory board, and, from April to date, has been a member of the enlarged advisory board (CIA) that also includes two representatives of the laboratories, services, and technical offices of the institute.

Since 2014 he has been the referee of project proposals in the framework of R&D Ministry calls - PON Major Projects - Digital Agenda/Sustainable Industry and Reprise referee for the Research and University Ministry.

Since July 2018, he has been the CNR-ISTI contact person for the Project Area (AP12) "Technologies for Aerospace and Earth Observation" and for the AP2 "Future Internet" of the DIITET department of the CNR.

He is a member of the Telecommunications and Information Technology Group (GTTI), the Interuniversity National Consortium for Telecommunications (CNIT), the IEEE Communications Society ETI on Machine Learning for Communications (MLC), the IEEE Communications Society ETI on Aerial Communications (ACETI), and the TC on Satellite and Space Communications (SSC). He has been participating in the International Network Generations Roadmap (INGR) Satellite WG since 2020, and he has recently joined the IEEE Special Interest Group on Satellite Mega-Constellations, and he will present a paper published in the April 2022 Issue of the IEEE Communications Magazine on the Feature Topic on "Low Earth Orbit Satellites to Enable Access Equality" entitled "Orbital Edge Offloading on Mega-LEO Satellite Constellations for Equal Access to Computing". He has been TPC member of the ComSoc's flagship conferences (ICC and Globecom) for many years and other IEEE and non-IEEE conferences and workshops. He is currently Associated Editor of the IAES International Journal of Reconfigurable and Embedded Systems (IJRES), in the Editorial Board Member of MDPI Sensors, of MDPI Networks, and Guest Editor of some MDPI special issues.

SCIENTIFIC RESPONSIBILITY IN RESEARCH PROJECTS

From 2006 to 2008, he was project manager of the UE FP6-SSA RINGrid project n. 31891 for CNR-ISTI, whose purpose was achieving the possibility of using scientific or industrial equipment remotely through satellite links and independently from its physical location to open new opportunities for industry, science, and business.

In 2009, he was co-project manager of PON FESR 2007-2013 Industria2015 EASY RIDER, co-leading WP9 (definition of the project's communication architecture) and leading both WP134 (study of a reliable V2X multicast protocol) and WP135 (implementation and testing of a reliable multicast system based on the NORM protocol).

In 2013, 2015, and 2020 he was project manager for CNR-ISTI of the ESA-ARTES 1 project SatNEx III, SatNEx IV, and SatNEx V; the latter continued until 2022.

From 09/2012 - 03/2015, he was work package manager of the project Smart Healthy Env (POR CREO FESR 2007/2013), contract no. CUP ARTEA n.486542, leading the implementation of a mobile communication infrastructure for pollution data collection based on Zigbee sensors.

In the period 7-2015 - 6-2017 he was head of CNR operational unit of the project entitled MIE (PON no. CTN01_00034_594122), which aimed at developing a system of innovative technologies able to exploit wireless sensors with very low energy consumption, to allow the pervasive monitoring of the parameters that define the behaviour of actors in motion.

In the period 01-09-2016 to 31-03-2019 he was head of CNR operational unit of the SCIADRO - Swarm of Drones project, (FAR/FAS 2014 D58I16000020008 CUP 726125) funded for 1M€ to CNR-ISTI, aiming at the design, prototype implementation and testing of enabling communication technologies to be installed onboard RPAS.

Alberto Gotta was also the CNR-ISTI scientific leader for the e-Navigation project, assigned by FINCANTIERI for €145,530 to CNR-ISTI from 1-2017 to 12-2018 on a Ministry of Transport project for the development of an Augmented Reality and Virtual Reality architecture on board ship and on a remote shore station. The task assigned to CNR-ISTI was developing a telematic satellite system for a cyber-physical system to interface the sensors of a ship's machinery compartment with the Augmented Reality systems onboard the ship (AR visor) and the Virtual Reality systems ashore as decision support systems for collision avoidance manoeuvres. This activity has been awarded by the DIITET department of the CNR for its innovativeness and the results achieved and a patent procedure is pending.

Since 2-8-2019 he is the work package leader of the WP2 in task 2.4 for the definition of the communication architecture of the Teaching project, funded by the EU H2020 n. 871385 ICT-1-2019, with a UE contribution of € 3M€.

PARTICIPATION IN RESEARCH PROJECTS

- Teaching, H2020, contract n.: 871385 EU.2.1.1.
Date: 1/01/2020 – to date
- Desira, H2020, contract n.: 818194 EU.3.2.1.3.
Date: 1/06/2019 – to date
- NESTORE, H2020, contract n.769643
Date: 1/09/2017 – to date
- MOSCARD0 ICT technologies for structural monitoring of old buildings based on wireless sensor networks and drones, FAR FAS 2014, CUP D78C15000100008
Date: 01-04-2016 - 31-10-2018
- Smart Monitoring Integrated System for Healthy Urban Environment in Smart Cities, POR CREO FESR 2007-2013, CUP ARTEA n.486542 e CUP CIPE n. D75C12004070007
Date: 01/09/2014 - 27/03/2015
- AA@H Active Ageing at Home, contract n. 414 14/12/2012
Date: 1/07/2013 – 30/06/2016
- ReAAL, FP7-CIP, Grant agreement ID 325189
Date: 16/1/2013 30/6/2016
- Universaal, FP7, Grant agreement ID 247950
Date: 1 Feb 2010 al 31 Gen 2014
- Giraff+, FP7-ICT Contract n.: Grant agreement ID 288173
Date: 1/1/2012 al 31/12/2014
- SatNEx II, FP6-ICT, contract n.: 027393
Date: 4/2006 - 3/2009
- SatNEx I, FP6-ICT, contract n.:507052
Date: 5/2004 - 3/2006

- I S-MANET, MIUR, D.D. N. 1694/RIC. 27/11/2002
Date: 11/2002-12/2003

AWARDS AND ACKNOWLEDGMENTS

- Acknowledgement for the scientific and coordination activities carried out in the RINGrid FP6 project, contract no. 31891, and for the definition of the functional architecture of the EasyRider project no. 00024MS01.
Date: 20-01-2010
- Young Researchers and Technologists Award 2012 Edition issued by the Institute of Information Science and Technologies A.Faedo.
Prize of 2000€ awarded following a competitive selection for the quality of research and the highest number of publications weighted on the number of authors in the year 2011 in the category 32-36 years old.
Date: 06-03-2013
- Acknowledgement of the Director of the DIITET department Emilio Fortunato Campana for the scientific activities carried out in the Fincantieri "E_Navigation" project for the commitment, great competence, dedication, and care with which the assigned work was carried out.
Date: 15-02-2019
- Top 25 Hottest Articles ScienceDirect on Computer Communications. 1st position in 2013 with the paper "Wireless sensor networks: A survey on the state of the art and the 802.15.4 and ZigBee standards in Computer Communications, Volume 30, Issue 7, May 2007, Pages 1655-1695 Baronti, P.; Pillai, P.; Chook, V.W.C.; Chessa, S.; Gotta, A.; Hu, Y.F.
Date: 2013
- Top 25 Hottest Articles ScienceDirect on Computer Communications. 1st position in 2012 with the paper "Wireless sensor networks: A survey on the state of the art and the 802.15.4 and ZigBee standards in Computer Communications, Volume 30, Issue 7, May 2007, Pages 1655-1695 Baronti, P.; Pillai, P.; Chook, V.W.C.; Chessa, S.; Gotta, A.; Hu, Y.F.
Date: 2012

SCIENTIFIC INDEXES (01/5/2022)

In Scopus (<https://www.scopus.com/authid/detail.uri?authorId=9846429300>) repository Alberto Gotta's metrics show 69 documents with 34 conference papers 29 journal papers most of those in the Q1 of the Scimago Journal Ranking, 3 Reviews, 2 Book Chapters and 1 Editorial with:

citations >1500

h-index 16

In Google Scholar (<https://scholar.google.com/citations?user=SLW1Dm4AAAAJ>) he accounts for more than 100 documents with:

citations >3300

h-index 20

i10-index 34

MOST RELEVANT JOURNAL PAPERS

- [1] Paolo Baronti, Prashant Pillai, Vince WC Chook, Stefano Chessa, Alberto Gotta, and Y Fun Hu. "Wireless sensor networks: A survey on the state of the art and the 802.15.4 and ZigBee standards". In: *Computer communications* 30.7 (2007), pp. 1655–1695.
- [2] Nedo Celandroni, Franco Davoli, Erina Ferro, and Alberto Gotta. "Long-lived TCP connections via satellite: cross-layer bandwidth allocation, pricing, and adaptive control". In: *IEEE/ACM Transactions on Networking* 14.5 (2006), pp. 1019–1030.

- [3] Tomaso de Cola, L Ronga, Tommaso Pecorella, Paolo Barsocchi, Stefano Chessa, Erina Ferro, Alberto Gotta, et al. "Communications and networking over satellites: SatNEx experimental activities and testbeds". In: *International Journal of Satellite Communications and Networking* 27.1 (2009), pp. 1–33.
- [4] X Liang, FLC Ong, Prashant Pillai, Pauline ML Chan, Vincenzo Mancuso, Georgios Koltsidas, Fotini-Niovi Pavlidou, Luca Caviglione, Erina Ferro, Alberto Gotta, et al. "Fusion of digital television, broadband Internet and mobile communications—Part II: Future service scenarios". In: *International Journal of Satellite Communications and Networking* 25.4 (2007), pp. 409–440.
- [5] Raffaello Secchi, Arjuna Sathiseelan, Francesco Potorti, Alberto Gotta, and Gorry Fairhurst. "Using Quick-Start to enhance TCP-friendly rate control performance in bidirectional satellite networks". In: *International Journal of Satellite Communications and Networking* 27.3 (2009), pp. 141–161.
- [6] FLC Ong, X Liang, Prashant Pillai, Pauline ML Chan, Georgios Koltsidas, Fotini-Niovi Pavlidou, Erina Ferro, Alberto Gotta, H Cruickshank, Sunil Iyengar, et al. "Fusion of digital television, broadband Internet and mobile communications—Part I: Enabling technologies". In: *International Journal of Satellite Communications and Networking* 25.4 (2007), pp. 363–407.
- [7] Nedo Celandroni, Franco Davoli, Erina Ferro, and Alberto Gotta. "Medium access control scheme for supporting user mobility in digital video broadcasting-return channel via satellite/satellite second generation—general architecture and functionalities". In: *IET communications* 4.13 (2010), pp. 1532–1543.
- [8] Nedo Celandroni and Alberto Gotta. "Performance analysis of systematic upper layer FEC codes and interleaving in land mobile satellite channels". In: *IEEE Transactions on Vehicular Technology* 60.4 (2011), pp. 1887–1894.
- [9] Nedo Celandroni, Erina Ferro, Alberto Gotta, Gabriele Oligeri, Cesare Roseti, Michele Luglio, Igor Bisio, Marco Cello, Franco Davoli, Athanasios D Panagopoulos, et al. "A survey of architectures and scenarios in satellite-based wireless sensor networks: system design aspects". In: *International Journal of Satellite Communications and Networking* 31.1 (2013), pp. 1–38.
- [10] Nedo Celandroni, Erina Ferro, and Alberto Gotta. "RA and DA satellite access schemes: a survey and some research results and challenges". In: *International Journal of Communication Systems* 27.11 (2014), pp. 2670–2690.
- [11] Nedo Celandroni, Erina Ferro, Alberto Gotta, Michele Luglio, and Cesare Roseti. "On the applicability of reliable transport protocols in satellite delay tolerant and disruptive networks". In: *International Journal of Satellite Communications and Networking* 32.2 (2014), pp. 141–161.
- [12] Alberto Gotta, Michele Luglio, and Cesare Roseti. "A TCP/IP satellite infrastructure for sensing operations in emergency contexts". In: *Computer Networks* 60 (2014), pp. 147–159.
- [13] Manlio Bacco, Pietro Cassarà, and Alberto Gotta. "Generalized Encoding CRDSA: Maximizing Throughput in Enhanced Random-Access Schemes for Satellite". In: *EAI Endorsed Transactions on Mobile Communications and Applications* 5 (2014).
- [14] Andrea Cardaci, Luca Caviglione, Erina Ferro, and Alberto Gotta. "Using SPDY to improve Web 2.0 over satellite links". In: *International Journal of Satellite Communications and Networking* 35.4 (2017), pp. 307–321.
- [15] Manlio Bacco and Alberto Gotta. "RLNC in satellite networks: a cooperative scenario for delivering M2M traffic". In: *International Journal of Satellite Communications and Networking* 35.6 (2017), pp. 605–620.
- [16] Manlio Bacco, Pietro Cassarà, Marco Colucci, and Alberto Gotta. "Modeling reliable M2M/IoT traffic over random-access satellite links in non-saturated conditions". In: *IEEE Journal on Selected Areas in Communications* 36.5 (2018), pp. 1042–1051.
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- [18] Manlio Bacco, Tomaso De Cola, Giovanni Giambene, and Alberto Gotta. "TCP-based M2M traffic via random-access satellite links: Throughput estimation". In: *IEEE Transactions on Aerospace and Electronic Systems* 55.2 (2018), pp. 846–863.
- [19] Manlio Bacco, Luca Boero, Pietro Cassarà, Marco Colucci, Alberto Gotta, Mario Marchese, and Fabio Patrone. "IoT applications and services in space information networks". In: *IEEE Wireless Communications* 26.2 (2019), pp. 31–37.
- [20] Pietro Cassarà, Alberto Gotta, and Tomaso de Cola. "A statistical framework for performance analysis of diversity framed slotted Aloha with interference cancellation". In: *IEEE Transactions on Aerospace and Electronic Systems* 56.6 (2020), pp. 4327–4337.
- [21] Nicola Tonellotto, Alberto Gotta, Franco Maria Nardini, Daniele Gadler, and Fabrizio Silvestri. "Neural network quantization in federated learning at the edge". In: *Information Sciences* 575 (2021), pp. 417–436.
- [22] Manlio Bacco, Pietro Cassarà, and Alberto Gotta. "Air-to-ground real-time multimedia delivery: A multipath testbed". In: *Vehicular Communications* 33 (2022), p. 100443.
- [23] Pietro Cassarà, Alberto Gotta, Mario Marchese, and Fabio Patrone. "Orbital Edge Offloading on Mega-LEO Satellite Constellations for Equal Access to Computing". In: *IEEE Communications Magazine* 60.4 (2022), pp. 32–36.