

Carlo Augusto Grazia

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contact

home page

languages

italian mother tongue

english fluency

programming

♥ C, Java

Python, C++

editing

LaTeX, HTML

education

- 2013–2015 **Ph.D.** in Information and Communication Technology The University of Modena and Reggio Emilia
Winner of the best Ph.D. thesis.
- 2010–2012 **Master** degree in Computer Science The University of Bologna
110/110 cum laude
Implementation of a tool for static deadlock analysis over an ABS core
ABS is a formal concurrent Object Oriented language born with a European Project HATS. The tool is based on an Inference Algorithm and an Analyzer.
- 2007–2010 **Bachelor** degree in Computer Science The University of Modena and Reggio Emilia
110/110 cum laude
Analysis of transcription factor binding site tool inside co-regulated genes
Bioinformatic tool is based on statistical representation for DNA mutation.
- 2002–2007 **Technical Expert** in Electr. & Telecomm. I.T. Enrico Fermi, Modena
100/100

experience

Full Time

- 2023–now **UNIVERSITY OF MODENA AND REGGIO EMILIA** Modena, Italy
Tenure Track Assistant Professor (RTDb) ING-INF/03
- 2022–2023 **UNIVERSITY OF MODENA AND REGGIO EMILIA** Modena, Italy
Research Fellow
- 2017–2022 **UNIVERSITY OF MODENA AND REGGIO EMILIA** Modena, Italy
Assistant Professor (RTDa) ING-INF/03
- 2016–2017 **UNIVERSITY OF MODENA AND REGGIO EMILIA** Modena, Italy
Research Fellow
- 2013–2016 **UNIVERSITY OF MODENA AND REGGIO EMILIA** Modena, Italy
PhD Student in ICT
Developed networking solutions for QoS provisioning in wireless/satellite environments.
Detailed achievements:
 - Investigated networking area:
 - Packet Scheduling
 - Active Queue Management
 - Middleware and Cross-Layering Solutions
 - Transmission Control Protocol
 - Learned how to merge research and industry through EU projects
- 2014–2015 **UNIVERSITY OF MODENA AND REGGIO EMILIA** Modena, Italy
Co.Co.Co
Developed middleware solutions for PPDR Systems

editorial experience

2020–now	Sensors Topic Board	MDPI
2017–now	Computer Communication Technical Committee	Elsevier
2019–2020	Telecom - Special Issue "Vehicular Communications" Guest Editor	MDPI

projects & collaborations

2023–now	Research Project with ESA SURPRISE: Standardised ground software components for orchestrating high throughput satellite services	Roma, Italy
2023–now	POR-FESR IGNITE 5.0: Intelligent and secure Networking in Industrial Environments: towards Industry 5.0	Modena, Italy
2022–now	Collaborator in the PNRR Spoke 7 Centro Nazionale per la Mobilità Sostenibile (MOST)	Modena, Italy
2020–now	Scientific partner at Tesla, Lamborghini, Maserati, Ducati, EDAG/Ferrari, Quest-Global and CNH Internship and research collaboration: Vehicular communications and networking	Modena & Bologna, Italy
2018–2019	Research Project with Alstom Group V2X communications and distributed architectures for road safety-related applications	Modena, Italy
2017–now	Research Project with EarthCloud NPO IoT-based Seismic Alert Systems Association Web Page for more information	Modena, Italy
2013–2015	The European FP7 Project PPDR-TC Public Protection and Disaster Relief Transformation Center Project Web Page for more information	Modena, Italy
2013-2014	The European FP7 Large Scale Integrated Project E-SPONDER A holistic approach towards the development of the first responder of the future Sito Web: http://www.e-sponder.eu/	Modena, Italy
2012	European Project EU-FET HATS Highly Adaptable and Trustworthy Software using Formal Method Project Web Page for more information	Bologna, Italy

teaching

- 2018–now **Automotive Connectivity** Alma Mater Studiorum UniBo & UniMoRe
Master Course available for Advanced Automotive Electronic Engineering (UniBo/UniMoRe), Electronic Engineering and Computer Engineering (UniMoRe)
- 2020–now **Communication Systems: Theory & Measurement** Alma Mater Studiorum UniBo
Master Course available for Electrical Vehicle Engineering (UniBo)
- 2021 **In vehicle connectivity** Motorvehicle University of Emilia-Romagna - MUNER
School for higher education on Future of automotive for intelligent mobility

awards

- 2023 **ASN** Ministero dell'Università e della Ricerca
National Scientific qualification as associate in the Italian higher education system for the disciplinary field of 09/F2 - Telecommunications and the field of 01/B1 - Informatics
- 2017 **Best Ph.D. Student** The ICT Doctorate School, UNIMORE
Awarded to the best research activity by the ICT school
- 2014 **Certificate of Merit** The University of Modena and Reggio Emilia
Awarded to the best researcher handed by the Chancellor
- 2013 **Best Presentation** The University of Padova
Awarded to the best presentation at the SSIE Summer School in Brixen
- 2012 **Letter of Merit** The University of Bologna
Awarded to the top student posted by the Chancellor
- 2010 **Scholarship** The University of Modena and Reggio Emilia
Awarded to the top bachelor thesis

communication skills

- 2013–now **Oral Presentations** Conferences and Workshops
Presented the research I conducted in:
- SSIE Summer School'13, Brixen
 - IEEE WiMob'14, Larnaca
 - IEEE PerCom'15, St.Louis
 - IEEE ICC'17, Paris
 - IEEE RTSI'17, Modena
 - IEEE ISNCC'18, Rome
 - IEEE WiMob'18, Limassol
 - IEEE ICC'20, Virtual Conf.
 - Workshop SFINGI'13, Modena
 - IEEE ICC'14, Sydney
 - INW Workshop'15, Cavalese
 - IEEE WiMob'15, Abu Dhabi
 - IEEE ConTEL'17, Zagreb
 - IEEE WiMob'17, Rome
 - IEEE PIMRC'18, Bologna
 - IEEE WiMob'19, Barcelona
- 2018–now **Teaching** University of Modena and Reggio Emilia
Master Course of Automotive Connectivity: Lessons in english

interests

professional: TCP-IP Linux systems, networking algorithms, wireless communications, intra&inter vehicular network protocols, formal analysis, software design
personal: video editing, ukulele, running, football, snooker, Rubik's cube

publications

Article in peer-reviewed Journal/Magazine

- L. Lusvarghi, Carlo A. Grazia, M. Klapez, M. Casoni and M.L. Merani
Awareness Messages by Vulnerable Road Users and Vehicles: Field Tests Via LTE-V2X
IEEE Transactions on Intelligent Vehicles; 10.1109/TIV.2023.3280744, 2023
- Carlo A. Grazia, N. Patriciello, T. Høiland-Jørgensen, M. Klapez and M. Casoni
Aggregating Without Bloating: Hard Times for TCP on Wi-Fi
IEEE/ACM Transactions on Networking; 10.1109/TNET.2022.3171594, 2022 - 10 May 2022
- M. Klapez, Carlo A. Grazia, M. Casoni
Experimental Evaluation of IEEE 802.11p in High-Speed Trials for Safety-Related Applications
IEEE Transactions on Vehicular Technology; 10.1109/TVT.2021.3111289, 2021 - 9 Sep 2021
- M. Klapez, Carlo A. Grazia, M. Casoni
Application-level Performance of IEEE 802.11p in Safety-related V2X Field Trials
IEEE Internet of Things Journal, 7(5), pp. 3850-3860, <https://doi.org/10.1109/JIOT.2020.2967649>
- Jan 2020
- M. Klapez, Carlo A. Grazia, M. Casoni
Minimization of IEEE 802.11p Packet Collision Interference through Transmission Time Shifting
J. Sens. Actuator Netw. 2020, 9(2), 17; <https://doi.org/10.3390/jsan9020017> - 26 Mar 2020
- M. Klapez, Carlo A. Grazia, M. Casoni
The Energy Footprint of 5G Multi-RAT Cellular Architectures
IEEE Access, early access, 10.1109/ACCESS.2021.3122797 - 26 Oct 2021
- Carlo A. Grazia, M. Klapez, M. Casoni
The New TCP Modules on the Block: A Performance Evaluation of TCP Pacing and TCP Small Queues
IEEE Access, Volume 9; 10.1109/ACCESS.2021.3113891 - 20 Sep 2021
- Carlo A. Grazia
Future of TCP on Wi-Fi 6
IEEE Access 2021, Volume 9; <https://doi.org/10.1109/ACCESS.2021.3102022> - 3 Aug 2021
- Carlo A. Grazia
A Performance Model for Wi-Fi Frame Aggregation Considering Throughput and Latency
IEEE Communication Letters 2020; <https://doi.org/10.1109/LCOMM.2020.2995590> - 19 May 2020
- Carlo A. Grazia, M. Klapez, M. Casoni
BBRp: Improving TCP BBR Performance Over WLAN
IEEE Access 2020, Volume 8; <https://doi.org/10.1109/ACCESS.2020.2977834> - 2 Mar 2020
- M. Klapez, Carlo A. Grazia, M. Casoni, S. Zennaro, M. Cozzani
Processing and Communication Delays in EWS: On the Performance of the Earthcloud Prototype
Wireless Communications and Mobile Computing, March 2019, DOI: 10.1155/2019/6206854
- Carlo A. Grazia, N. Patriciello, M. Klapez, M. Casoni
Transmission Control Protocol and Active Queue Management together against congestion: cross-comparison through simulations
Simulation: Transactions of the Society for Modeling and Simulation International, November 30, 2018, DOI: 10.1177/0037549718814626

M. Casoni, Carlo A. Grazia, M. Klapez
SDN-Based Resource Pooling to Provide Transparent Multi-Path Communications
IEEE Communication Magazine, DOI: 10.1109/MCOM.2017.1601214

M. Klapez, Carlo A. Grazia, M. Casoni
A Hybrid Algorithm to combine Redundancy and Concurrency in Virtual Network Resource Pooling
Internet Technology Letters, John Wiley & Sons, DOI: 10.1002/itl2.18

M. Casoni, Carlo A. Grazia, M. Klapez, N. Patriciello
How to avoid TCP Congestion without dropping Packets: an Effective AQM called PINK
accepted for publication in the Computer Communications Journal, Elsevier, ISSN: 0140-3664 , available online DOI: 10.1016/j.comcom.2017.02.010

M. Casoni, Carlo A. Grazia, P. Valente
Achieving a High Throughput and a Low Latency through a Modular Packet Scheduler
accepted for publication in the International Journal of Communication Networks and Distributed Systems, Inderscience Publishers, ISSN: 1754-3916.

M. Casoni, Carlo A. Grazia, M. Klapez
A software defined 5G cellular network with links virtually pooled for public safety operators
Transactions on Emerging Telecommunications Technologies, John Wiley & Sons, 2016, DOI: 10.1002/ett.3092

M. Casoni, Carlo A. Grazia, M. Klapez, N. Patriciello
QRM: a Queue Rate Management for fairness and TCP flooding protection in mission-critical networks
Computer Networks, Elsevier, pp. 54-65, Vol.93, December 2015, ISSN: 1389-1286, DOI: 10.1016/j.comnet.2015.10.010

M. Casoni, Carlo A. Grazia, M. Klapez, N. Patriciello
A congestion control middleware layer with dynamic bandwidth management for satellite communications
International Journal of Satellite Communications and Networking, John Wiley & Sons, 2015, ISSN: 1542-0981, DOI: 10.1002/sat.1129

M. Casoni, Carlo A. Grazia, M. Klapez, N. Patriciello
Integration of Satellite and LTE for Disaster Recovery
Communications Magazine, IEEE, March 2015, Pages 47-53, DOI: 10.1109/MCOM.2015.7060481

M. Casoni, Carlo A. Grazia, P. Valente
TEMPEST: a new Test Environment for Performance Evaluation of the Scheduling of packets
Simulation Modelling Practice and Theory (SIMPAT), Elsevier, Volume 49, December 2014, Pages 258–276, ISSN: 1569-190X, DOI: 10.1016/j.simpat.2014.10.005

M. Casoni, Carlo A. Grazia, P. Valente
A Green, Modular and Fair Packet Scheduler for boosting Throughput over Wireless Links
Journal of Networking Technology (JNT), Vol. 4, Issue 4, pp. 192-202, December 2013, ISSN: 0976-898X

Article in International Conference/Workshop

Carlo A. Grazia, M. Klapez, M. Casoni
Comparing different GPS solutions for the Cooperative Awareness Messages Distribution
IEEE WiMob 2023, VN4RRSR Workshop, Montreal, Canada

Bjørn I. Teigen, N. Davies, K.O. Ellefsen, T. Skeie, Carlo A. Grazia and J. Torresen
A Lower Bound on Latency Spikes for Capacity-Seeking Network Traffic
IEEE ICC'23, 2023, Rome, Italy

M. Klapez, Carlo A. Grazia, M. Casoni
The Impact of Transmission Power on the Safety-Related Performance of IEEE 802.11p
IEEE WiMob 2021, STWiMob Workshop, Virtual Conference

Carlo A. Grazia, M. Klapez, M. Casoni
IRONMAN: Infrastructured RSSI-based Opportunistic routing in Mobile Adhoc Networks
IEEE WiMob 2020, ICT4PPRR Workshop, Virtual Conference

Carlo A. Grazia, N. Patriciello, M. Klapez, M. Casoni
BBR+: improving TCP BBR Performance over WLAN
IEEE ICC, 2020, International Conference on Communications, Virtual Conference

Carlo A. Grazia
IEEE 802.11n/ac Wireless Network Efficiency under different TCP Congestion Controls
EN4PPDR'19, 2019, WiMob Sixth International Workshop on ICT Systems for Public Protection and Risk Reduction

M. Klapez, Carlo A. Grazia, M. Casoni
IEEE 802.11p field trials on interference minimization for safety-related V2X applications
EN4PPDR'19, 2019, WiMob Sixth International Workshop on ICT Systems for Public Protection and Risk Reduction

M. Klapez, Carlo A. Grazia, L. Rold, M. Casoni
IEEE 802.11p under congestion in an Infrastructure-to-Vehicle communication approach
2019 AEIT International Conference of Electrical and Electronic Technologies for Automotive (AEIT AUTOMOTIVE).

Carlo A. Grazia
Towards 1 ms WLAN Latency
Accepted in IEEE 2018 WiMob workshop on Emergency Networks for Public Protection and Disaster Relief, EN4PPDR'18, October 15-17, 2018, Limassol, Cyprus.

M. Klapez, Carlo A. Grazia, S. Zennaro, M. Cozzani, M. Casoni
First Experiences with Earthcloud, a Low-Cost, Cloud-Based IoT Seismic Alert System
Accepted in IEEE 2018 WiMob workshop on Emergency Networks for Public Protection and Disaster Relief, EN4PPDR'18, October 15-17, 2018, Limassol, Cyprus.

Carlo A. Grazia
On the Performance of IEEE 802.11P Outside the Context of a BSS Networks
Proc. of IEEE 2018 International Symposium on Personal, Indoor and Mobile Radio Communications (IEEE PIMRC), June 9-12, 2018, Bologna, Italy.

Carlo A. Grazia, N. Patriciello, Toke Hoiland-Jorgensen, M. Klapez, M. Casoni, J. Mangués-Bafalluy
Adapting TCP Small Queues for IEEE 802.11 Networks
Proc. of IEEE 2018 International Symposium on Personal, Indoor and Mobile Radio Communications (IEEE PIMRC), June 9-12, 2018, Bologna, Italy.

M. Klapez, Carlo A. Grazia, M. Casoni
Energy Savings of Sleep Modes enabled by 5G Software-Defined Heterogeneous Networks
Proc. of IEEE 2018 International Forum on Research and Technologies for Society and Industry, RTSI 2018, September 10-13, 2018, Palermo, Italy.

M. Klapez, Carlo A. Grazia, M. Casoni
Quantifying Sleep-Related Energy Savings in Indoor LTE HetNets Radio Access
Proc. of IEEE 2018 International conference on selected topics in Mobile and Wireless Networking, MoWNet 2018, June 20-22, 2018, Tangier, Morocco.

Carlo A. Grazia, M. Klapez, M. Casoni
The Bufferboost Effect: when Drops and Redundancy boost the Throughput

Proc. of IEEE 2018 International Symposium on Networks, Computers and Communications (ISNCC): Wireless and Mobile Communications & Networking, June 19-21, 2018, Rome, Italy.

Toke Hoiland-Jorgensen, Carlo Augusto Grazia, Per Hurtig, Anna Brunstrom
Flent: The FLExible Network Tester
ValueTools Conference, December 5-7, 2017, Venice, Italy, DOI: 10.1145/3150928.3150957

Carlo A. Grazia, M. Casoni
Technology independent Scheduling Architecture for V2X Communications
IEEE WiMob Conference, Workshop EN4PPDR, October 9-11, 2017, Rome, Italy, DOI: 10.1109/WiMOB.2017.8115826

Carlo A. Grazia, N. Patriciello, M. Klapez, M. Casoni
Which AQM fits IoT better?
accepted at the next IEEE RTSI workshop, Modena, Italy, September 11-13 2017.

M. Klapez, Carlo A. Grazia, M. Casoni
Reducing Cellular Networks Power Consumption: the Role of Resource Pooling and Cooperation
Proc. of the IEEE ConTEL Conference, Zagreb, Croatia, 28-30 June 2017, pp.107-114, ISBN:9789531842242.

Carlo A. Grazia, N. Patriciello, M. Klapez, M. Casoni
A Cross-Comparison between TCP and AQM Algorithms: which is the Best Couple for Congestion Control?
Proc. of the IEEE ConTEL Conference, Zagreb, Croatia, 28-30 June 2017, pp.75-82, ISBN:9789531842242.

Carlo A. Grazia, N. Patriciello, M. Klapez, M. Casoni
Mitigating Congestion and Bufferbloat on Satellite Networks through a Rate-Based AQM
Proc. of the IEEE ICC International Conference on Communications, May 21-25, 2017, Paris, France, pp.4477-4482.

Carlo A. Grazia, N. Patriciello, M. Klapez, M. Casoni
Enabling Smart Environments by avoiding TCP Congestion through PINK: a no-drop AQM
Proc. of the IEEE WiMob Conference, Workshop SEUNET, October 17-19, 2016, New York, USA.

M. Klapez, Carlo A. Grazia, M. Casoni
Towards Massively Multipath Transmissions for Public Safety Communications
Proc. of the IEEE WiMob Conference, Workshop EN4PPDR, October 17-19, 2016, New York, USA.

N. Patriciello, Carlo A. Grazia, J. Nunez-Martinez, J. Baranda, J. Manges-Bafalluy, M. Casoni
Performance Evaluation of Backpressure Routing in Integrated Satellite-terrestrial Backhaul for PPDR Networks
Proc. of the IEEE WiMob Conference, Workshop EN4PPDR, October 17-19, 2016, New York, USA.

M. Casoni, Carlo A. Grazia, M. Klapez
Enabling Resource Pooling in Wireless Networks through Software-Defined Orchestration
Proc. of the IEEE ICC International Conference on Communications, May 22-27, 2016, Kuala Lumpur, Malaysia.

M. Casoni, Carlo A. Grazia, M. Klapez
An SDN and CPS based opportunistic Upload Splitting for mobile users
Proc. of the EAI International Conference on CYber physiCaL systems, IoT and sensors Networks (CYCLONE), October 26, 2015, Rome, Italy.

M. Casoni, Carlo A. Grazia, M. Klapez, N. Patriciello

DyBRA: a Dynamic Bandwidth Reservation Algorithm to enhance Satellite Communications
Proc. of the IEEE Global Communications Conference (GLOBECOM), December 6-10, 2015, San Diego, California (USA).

M. Casoni, Carlo A. Grazia, M. Klapez, N. Patriciello
A Cooperative Middleware for Enhancing TCP Performance over High Delay Networks
Proc. of the IEEE Global Communications Conference (GLOBECOM), December 6-10, 2015, San Diego, California (USA).

Carlo A. Grazia, M. Klapez, N. Patriciello, M. Casoni
PINK: Proactive INjection into ack, a queue manager to impose fair resource allocation among TCP flows
Proc. of the IEEE WiMob Conference, Workshop EN4PPDR, October 19-21, 2015, Abu Dhabi, UAE.

Carlo A. Grazia, M. Klapez, N. Patriciello, M. Casoni, H. Gierszal, P. Tyczka, K. Pawlina, A. Amditis, E. Sdongos
Performance Evaluation and Economic Modelling of PPDR Communication Systems
Proc. of the IEEE WiMob Conference, Workshop EN4PPDR, October 19-21, 2015, Abu Dhabi, UAE.

M. Casoni, Carlo A. Grazia, M. Klapez, N. Patriciello
Implementation and Validation of TCP Options and Congestion Control Algorithms for ns-3
Proc. of the 2015 ACM Workshop on ns-3 (WNS3), 13-14 May 2015, Barcelona (Spain), pp. 112-119, DOI: 10.1145/2756509.2756518

M. Casoni, Carlo A. Grazia, M. Klapez, N. Patriciello
Towards Emergency Networks Security with Per-Flow Queue Rate Management
International Workshop on Pervasive Networks for Emergency Management (PerNEM), March 27, 2015, St. Louis, Missouri

M. Casoni, Carlo A. Grazia, M. Klapez, N. Patriciello
Reducing Latency in Satellite Emergency Networks through a Cooperative Transmission Control
Proc. of IEEE Global Communications Conference (GLOBECOM), December 8-12, 2014, Austin, Texas

Carlo A. Grazia, M. Casoni, P. Valente
TEMPEST: Test EnvironMent for Performance Evaluation of the Scheduling of packeTs
Proc. of IEEE Emergency Networks for Public Protection and Disaster Relief (EN4PPDR) Workshop within IEEE WiMob 2014, 8 October 2014, Larnaca (Cyprus), pp.300-307.

Carlo A. Grazia, M. Klapez, N. Patriciello, M. Casoni, A. Amditis, E. Sdongos, H. Gierszal, D. Kanakidis, C. Katsigiannis, K. Romanowski, P. Simplicio, A. Oliveira, S. Sonander, J. Jackson
Integration between Terrestrial and Satellite Networks: the PPDR-TC vision
Proc. of IEEE Emergency Networks for Public Protection and Disaster Relief (EN4PPDR) Workshop within IEEE WiMob 2014, 8 October 2014, Larnaca (Cyprus), pp.202-209.

M. Casoni, Carlo A. Grazia, P. Valente
A Low-Latency and High-Throughput Scheduler for Emergency and Wireless Networks
IEEE International Conference on Communications (ICC), June 10-14, 2014, Sydney, Australia

M. Casoni, Carlo A. Grazia, N. Patriciello
On the Performance of Linux Container with Netmap/VALE for Networks Virtualization
IEEE International Conference On Networking (ICON), December 11-13, 2013, Singapore

M. Casoni, Carlo A. Grazia, P. Valente
A Flexible and Green Scheduler for providing QoS and High Throughput over Wireless Links

IEEE ICCST, October 04-06, 2013, Hammamet, Tunisy, pp.218-225, ISBN: 978-9938-9511-6-5

E. Giachino, Carlo A. Grazia, C. Laneve, M. Lienhardt, P. Wong
DeadLock Analysis of Concurrent Objects - Theory and Practice
iFM Conference, Springer, June 10-14, 2013, Turku, Finland

Technical Reports & Posters

M. Casoni, Carlo A. Grazia, P. Valente
HFS & TEMPEST: Technical Report
Italian Networking Workshop (INW'15), January 14-16, 2015, Cavalese, Italy

M. Casoni, Carlo A. Grazia, M. Klapez and N. Patriciello
A Validation Tool for PPDR Architectures based on ns-3
ACM Workshop on ns-3 (WNS3), 13-14 May 2015, Barcelona (Spain)