

# Curriculum Vitae of Carla Fabiana Chiasserini

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<b>Nationality</b>	<b>Italian</b>
<b>Birth date</b>	<b>28/10/1970</b>

## **Current Academic Position**

Qualification/Title	<b>Full Professor</b>
University	<b>Politecnico di Torino</b>
Department	<b>Department of Electronics and Telecommunications</b>

## **Working experience**

Dates	<b>May – Oct. 1996</b>
Employer	<b>Politecnico di Torino, Italy</b>
Position held	<b>Research Engineer, Department of Electronics (now Department of Electronics and Telecommunications)</b>
Main activities/responsibilities	<ul style="list-style-type: none"> <li>• <b>Research activity on wireless ATM networks</b></li> </ul>

Dates	<b>Aug. 1998 – Dec. 1999</b>
Employer	<b>Center for Wireless Communications (CWC), University of California at San Diego, U.S.A.</b>
Position held	<b>Visiting PhD Student at the Department of Electrical and Computer Engineering</b>
Main activities/responsibilities	<ul style="list-style-type: none"> <li>• <b>Research activity on energy-efficient networks;</b></li> <li>• <b>Research project and industrial contract with Sprint, on resource allocation in wireless networks</b></li> </ul>

Dates	<b>Feb. – Oct. 2000</b>
Employer	<b>Politecnico di Torino, Italy</b>
Position	<b>Postdoctoral fellow, Department of Electronics and Telecommunications</b>
Main activities/responsibilities	<ul style="list-style-type: none"> <li>• <b>Research activity on wireless systems</b></li> </ul>

Dates	<b>July – Sept. 2000</b>
Employer	<b>University of California, San Diego, CA (USA)</b>
Position	<b>Postdoctoral fellow, Department of Electrical and Computer Engineering</b>
Main activities/responsibilities	<ul style="list-style-type: none"> <li>• <b>Research activity on distributed wireless networks;</b></li> <li>• <b>Advising PhD students</b></li> </ul>
Dates	<b>July – Oct. 2001</b>
Employer	<b>University of California, San Diego, CA (USA)</b>
Position	<b>Visiting Assistant Professor</b>
Main activities/responsibilities	<ul style="list-style-type: none"> <li>• <b>Research activity on the coexistence of different wireless technologies and power allocation in wireless networks;</b></li> <li>• <b>Advising PhD students</b></li> </ul>
Dates	<b>July – Sept. 2002 and July – Sept. 2003</b>
Employer	<b>University of California, San Diego, CA (USA)</b>
Position	<b>Visiting Researcher</b>
Main activities/responsibilities	<ul style="list-style-type: none"> <li>• <b>Research on cooperative wireless networks;</b></li> <li>• <b>Advising PhD students</b></li> </ul>
Dates	<b>Dec. 2000 – Nov. 2006</b>
Employer	<b>Politecnico di Torino, Italy</b>
Position held	<b>Assistant Professor (ING-INF/03), Department of Electronics and Telecommunications</b>
Dates	<b>Nov. 2006 – Dec. 2018</b>
Employer	<b>Politecnico di Torino, Italy</b>
Position held	<b>Associate Professor (ING-INF/03), Department of Electronics and Telecommunications</b>
Dates	<b>Dec. 2018 – present</b>
Employer	<b>Politecnico di Torino, Italy</b>
Position held	<b>Full Professor (ING-INF/03), Department of Electronics and Telecommunications</b>
Dates	<b>July – Sept. 2012</b>
Employer	<b>Monash University (Australia)</b>
Position	<b>Visiting Professor</b>
Main activities/responsibilities	<ul style="list-style-type: none"> <li>• <b>Research activity on network coding and Software Defined Networking (SDN)</b></li> </ul>

Dates	<b>Feb. 2011 – present</b>
Employer	<b>National Research Council of Italy (CNR), Institute of Electronics, Computer and Telecommunication Engineering (IEIIT), Italy</b>
Position held	<b>Research Associate</b> <b>(dal 17/2/2017 Associate with Research Mandate, by virtue of the 83/2016 deliberation)</b>
Main activities/responsibilities	<ul style="list-style-type: none"> <li>• <b>Research activity on sensor networks, mobile networks, MIMO relay networks</b></li> </ul>

### **Education and Training**

Date	<b>June-Dec. 1995</b>
Institution which issued the degree	<b>Massachusetts at Amherst (UMASS), MA, USA</b>
Type of Activity	<b>Master Thesis</b>

Date	<b>Feb. 6, 1996</b>
Institution which issued the degree	<b>University of Florence, Italy</b>
Type of Degree awarded	<b>Master of Science in Electronics Engineering (110/110 cum laude)</b>

Date	<b>May 15, 2000</b>
Institution which issued the degree	<b>Politecnico di Torino, Italy</b>
Type of Degree awarded	<b>PhD in Electronic and Communication Engineering</b>

## **1. Scientific Activity**

**Research statement.** My research interests lie in the area of Wireless Communication Networks. Networking research fascinates me for the impact that it has on everyday life, as well as because of the tremendous breadth of the field. Broadly, networking research has two flavors: i) System-design, which is mainly about protocols and algorithmic design, implementation and experimentation. ii) Network-theory, which is about performance evaluation using analytic techniques. The research I enjoy most is a combination of these two. I like designing algorithms and methods that solve real problems, starting with actual data and scenarios. Simulations or experiments are needed to consider solid grounded scenarios, to show the behavior of an algorithm/architecture in realistic situations. But I also believe that analytical modeling can provide fundamental insights and guidelines toward an efficient system architecture and protocol design, as well as it enables us to verify the correctness of the developed solutions and their good performance in large-scale scenarios, and to predict their behavior in situations other than today's real-world conditions.

Over the years, I have covered several aspects of communication network systems, and of mobile networks in particular. I started focusing on heterogeneous wireless and wired network architectures, where I applied theoretical models and used simulation tools to study their performance. Then, during my post-doctoral studies at UCSD (California, U.S.), I moved to energy efficiency in wireless networks, modeling the battery behavior in mobile devices and designing algorithms and protocols aiming at establishing the optimal tradeoff between energy saving and level of user's quality of service. During this period, I had also the opportunity to work with Prof. John Proakis and to participate in research projects involving large U.S.-based companies. Afterwards, I started investigating cooperation in distributed wireless networks, through the lens of game theory. This pioneering study, along with my results on energy-efficient wireless networks, has had a great impact on the scientific community at international level and gained me the elevation to IEEE Fellow.

In collaboration with the National Research Council of Italy (CNR), of which I am a Research Associate, I also studied wireless sensor networks. This activity has given me the opportunity to further broaden my research as I applied signal processing methodologies for the accurate reconstruction of physical signals, monitored through sensor networks. The research fields in which I am most active these days lay in the area of connected cars and 5G networks. In these fields, I have recently addressed aspects such as design and optimization of SDN/NFV network architectures, security, data-driven performance evaluation, analytical modeling, application development and experimental assessment.

I enjoy my work, and I like to always tackle problems that I perceive as important and with high impact on the technological and societal advancement. In fact, since 1999 (and thus much earlier than the "green wave" started) I actively worked on energy-efficient networks and how to reduce the energy consumption footprint of mobile communication systems, a topic that has since boomed. I also coordinated an international project on green wireless access, funded by the Qatar National Research Fund (QNRF), and I am the Coordinator of the Politecnico di Torino Research Unit in the H2020 5G-PPP European project 5G-Crosshaul, addressing energy efficiency as one of the major Key Performance Indices (KPIs) for 5G systems. I am also the Coordinator of a research project that aims at making "local" short-medium range communication the dominant way people will access content and services, in order to dramatically improve user quality of experience, and reduce monetary cost, radio resource and energy consumption, as well as improve privacy. The project has originated from one of my proposals evaluated in Class A (fundable) within the ERC Consolidator Grant Call in 2014. Another line of research of mine, with great social and economic impact, is the design of communication networks for emergency situations and for predicting and handling natural disasters. On this topic, I am actively conducting research within the European project H2020 I-REACT, in which I am the Coordinator of the Politecnico di Torino Research Unit. In particular, I am applying machine learning in order to classify events and predict the occurrence and the extension of emergency situations. Very recently, I have been addressing safety services and autonomous vehicles, which are expected to significantly reduce the number of fatal accidents and improve people's daily life. I am considered one of the most renowned experts of vehicular networks at international level, I have been supported by companies such as Magneti Marelli and I am the Coordinator of two research projects one with FCA and the other one with TIM (the major Italian Mobile Operator), as well as the Coordinator of the Politecnico di Torino Research Unit in the H2020 5G-PPP European project 5G-Transformer that addresses safety in the automotive domain as one of the main use cases. Within 5G-Transformer I closely collaborate on the automotive domain with companies and research centers such as Nokia (Germany), Ericsson (Italy), NEC (Germany) and Nextworks (Italy). I am also a Scientific Officer of the CARS "Automotive Research & Sustainable Mobility" Lab at Politecnico di Torino.

Connected autonomous vehicles, and the understanding of how they work, they will evolve and the benefits they will bring, is indeed a topic that fascinates me and in which I am deeply involved. Along with my research group, we are developing analytical models and as well as simulation tools in order to understand the critical aspects of such systems and how synergies between communication and sensor data can dramatically improve the performance of safety services and the behavior of autonomous vehicles. Another fundamental aspect in this context I'm looking at, is the design and optimization of 5G systems toward the support of efficient connected vehicles and their interaction with vulnerable users (e.g., pedestrians, bicycles). My interest in this topic is also due to its high interdisciplinarity, as it involves communication, networking, control theory, machine learning, image processing, security and privacy aspects. The complexity of the system calls for new algorithms, protocols and communication technologies such as mmWave to collect and exchange the enormous amount of data that vehicles will generate (today's cars already generate up to 25 Gigabytes of data per hour). Related to that, I am investigating new methodologies to analyze the data – i.e., Big Data methodologies, and more importantly to extract critical information. Vehicular networks and 5G systems are the main research directions I'm currently working on.

It is evident that along my career my interests have evolved touching different aspects of wireless networks, from physical-layer aspects, to network architecture and protocol design, to application analysis and development. In all fields I studied, I have been especially good in starting new research lines and in defining long-term research programs. I provided highly important contributions to the field of cellular, sensor and mobile networks. These activities have given me a broad view of the interactions among the elements of complex communication systems. In my research projects and scientific papers, I delivered theoretical models of such systems and analysis based on game theory, optimization methodologies, stochastic models and random matrix theory. I also presented system performance evaluation based on simulation, software implementation and testbed realization. This variety of experience has been a key asset for leading a research group and for coordinating the research activities described above. My research

results have been highly regarded worldwide and had a very significant impact on both the international scientific community and the progress of communication network technologies. The high international recognition that I achieved also gave me the opportunity to participate and coordinate major research projects and to collaborate with several renowned experts working at national and foreign institutions.

### 1.1. International diffusion

According to Google Scholar, my works received more than 9000 citations and **my H-index is 48** - <https://scholar.google.it/citations?user=np00024AAAAJ&hl=en>

Scopus database - <https://www-scopus-com.ezproxy.biblio.polito.it/authid/detail.uri?authorId=7004886008>

### 1.2. Complete list of all my publications

The complete list of my publications can be found at:  
[http://porto.polito.it/view/creators/Chiasserini=3ACarla\\_Fabiana=3A003839=3A.html](http://porto.polito.it/view/creators/Chiasserini=3ACarla_Fabiana=3A003839=3A.html)

The list includes:

- 1 book;
- 10 book chapters;
- Over 300 scientific papers, out of which more than 100 have been published in highly prestigious international journals that are the most influential in my field, such as IEEE or ACM Transactions and IEEE Journals;
- 5 patents, plus 1 under submission to the IPR office;
- 3 contributions to the ETSI MEC standardization.

## 2. Coordination of research and technology transfer groups and projects

### 2.1. Coordination and management of research groups and number and type of PhD and Post-Doc students that I supervised

I created a research group on wireless networks at Politecnico di Torino that includes about 10 among researchers, postdoctoral fellows and PhD students. Also, I have been very successful in attracting students and researchers from abroad. I have advised:

- more than 100 graduate students (MSc thesis): most of them have carried out their thesis working within the Wireless Networks Lab at Politecnico di Torino, of which I am the director;
- 32 PhD students;
- 12 postdoctoral fellows.

Mrs. Zana Limani and Mr. Alaa Awad have been awarded as Best PhD Student of the PhD Program in Electrical, Electronic and Communication Engineering of the Politecnico di Torino., in 2015 and 2019, respectively.

Finally, I would like to mention that I advised one PhD student supported by Telecom Italia S.p.A., one PhD student supported through a scholarship funded by Eurecom (France), two PhD students supported by the QNRF program (based in Qatar) and one PhD student supported by the CARS lab. This also highlights my ability to attract funds for research activities. In general, all PhD students I have supervised have published the results of their research activity in first-tier international conferences and prestigious journals, thus confirming my ability to lead a successful group working at the cutting edge of research.

## 2.2. Direction of labs and role in inter-department labs

- I am the director of the Wireless Networks Lab at Politecnico di Torino, which hosts MSc students' theses and PhD students, as well as Post-docs. The activity of the lab focuses on device-to-device communications and wireless SDN/NFV. Several publications have originated from the lab experimental activities, including my patents on the traffic scheduler for IEEE 802.11e networks and on LTE traffic scheduling. In particular, I would like to mention my recent research activity on Mobile Edge Computing (MEC) and vehicular services in 5G systems, which originated my 2017 research contract with TIM and FCA, and my 2016 ACM CAN paper that won the "Top Paper Award".
- I was the responsible for the living vehicular testbed at Politecnico di Torino from 2010 till 2017. It included roadside units, vehicles equipped with communication devices, environmental sensors and cameras. The testbed has been used for scientific activity, examples of top-tier scientific products originated from it are my 2011 IEEE JSAC [48] and 2014 IEEE TMC [33] journal papers. It was used also for testing solutions developed within industrial and research projects (see, e.g., the IoT\_ToI and LIMPID projects, in collaboration with Magneti Marelli), and for educational purposes. In particular, it was open to MSc students who wanted to carry out their thesis project by taking a hands-on approach on solutions for vehicular networks and applications. Finally, the living vehicular testbed gave me the opportunity to establish close collaborations with Magneti Marelli, GTT (the public transportation company in Turin), as well as the CSP and ISMB research centers. Nowadays, the experimental equipment and the related scientific activity has become part of the CARS lab (see below).
- Since February 2018, I officially am a Scientific Officer of the CARS ("Center for Automotive Research & Sustainable mobility") center at Politecnico di Torino, i.e., one of the newly inter-department labs established by the University. The CARS center involves 7 Departments and focuses on connected cars, logistics, mobility and new technologies for hybrid/electric vehicles. Specifically, within CARS, I am the leader of the research and experimental activity on connected autonomous cars.

## 2.3. International collaborations

As mentioned, during my career I collaborated with many renowned experts at international level. Below, I summarize my past and current collaborations.

- Prof. Ramesh R. Rao, University of California at San Diego (UCSD, USA). The collaboration started in 1998 and continued for seven years, leading to numerous publications on energy efficiency in wireless networks.
- Dr. Vikram Srinivasan, formerly with NUS and Bell Labs (India). The collaboration, mainly on node's cooperation, started at USCD in 2001 and continued for several years, originating highly cited publications.
- Prof. John S. Proakis, Space Naval Warfare Systems Center (San Diego, USA). The collaboration started at UCSD in 2001 and focused on power control and traffic scheduling in wireless ad hoc networks.
- Dr. Alberto Conte and Dr. Paul Dauchy, Alcatel (France). The collaboration started within a research contract in 2003 and originated two patents and some highly cited papers on the IEEE 802.11e standard.
- Prof. Emanuele Viterbo, Monash University (Australia). A fruitful collaboration has been lasting for more than 12 years and has tackled various aspects of wireless communication, signal processing and wireless networks. The collaboration is still active (see, e.g., my paper recently accepted in TCOM). It has originated numerous prestigious publications.
- Dr. Marco Fiore, INSA-Lyon (France) and IEIIT-CNR (Italy). The collaboration lasted for several years and is still active. It has focused on the study of protocols, services and security mechanisms for vehicular networks, leading to several successful publications.
- Dr. Alberto Tarable, IEIIT-CNR (Italy). I started collaborating with Dr. Tarable on wireless communications and opinion dynamics, a research activity that led to publications in top journals. The collaboration is still active.
- Prof. Jerome Härrı and Prof. Pietro Michiardi, Eurecom (France). The collaboration, mainly on content sharing in mobile networks and vehicular networks, has led to joint publications as well as to the preparation of project proposals. The collaboration with both Prof. Härrı is still active.

- Prof. Tamer ElBatt, Nile University (Egypt). The collaboration started when Prof. ElBatt visited my research group in 2012 and continued through the GAD project.
- Prof. Mohsen Guizani and Dr. Amr Mohamed, Qatar University (Qatar). The collaboration started with the GAD project and has originated several works on cellular networks. It is still going on through PhD student positions funded by the Qatar National Research Fund (QNRF). It has led to several publications, both in conference proceeding and journals, as well as patents.
- Prof. Falko Dressler, University of Paderborn (Germany). The collaboration focused on vehicular networks. In particular, we studied how to optimize the use of network resources so as to provide the required quality of service to vehicular users that wish to access the Internet. The collaboration originated two highly cited works: one conference and one journal paper. The collaboration is still on-going.
- Prof. Pietro Manzoni, Universitat Politècnica de València (Spain). The collaboration, started in 2012, it focuses on protocols and services for vehicular networks. It has originated one conference and one journal paper.
- Prof. Swades De, IIT Delhi (India). The collaboration started when Prof. De visited my research group in July 2014. It focuses on energy transfer via RF signals. It originated a journal paper and a conference paper. The collaboration is still active.
- Dr. Chetna Singhal, IIT Kharagpur (India). The collaboration focuses on 5G networks and led to two conference paper. Dr. Singhal and I also gave a course on 5G systems in December 2017, at IIT Kharagpur, attended by about 50 PhD students.
- Prof. Marco Gruteser, Rutgers University (NJ, USA). The collaboration focused on the development of a safety application for pedestrians crossing a street in an urban environment. The solution leveraged on the use of sensors and on data analysis. It originated a conference paper at ACM MobiSys 2015. The application also appeared in the highlights of the Wall Street Journal: <http://www.wsj.com/articles/texting-while-walking-isnt-funny-anymore-1455734501>
- Prof. Carlos Cano and Dr. Antonio de la Oliva Delgado, Universidad Carlos III de Madrid (Spain). The collaboration has started on 5G networks, within the H2020 5G-Crosshaul project and the 5G-TRANSFORMER project.
- Dr. Xavi Perez and Xi Li, NEC (Germany), and Giada Landi, NEXTWORKS (Italy). The collaboration started within the 5G-Crosshaul project and is still going on through the 5G-TRANSFORMER project. It led to several joint conference papers and to the realization of successful testbed and demos on energy efficiency and wireless SDN/NFV.
- Dr. Marco Caretti and Dr. Gian Michele Dell'Aera, TIM S.p.A. (Italy). The collaboration focuses on LTE-A and 5G networks and led to three joint papers and one patent. The collaboration is still active and currently takes place within the research contract of which I'm the Lead PI.
- Prof. Scott Kirkpatrick, School of Computer Science and Engineering, The Hebrew University of Jerusalem (Israel). The collaboration focuses on mobile data analysis and has led to 3 conference/workshop papers and 3 journal papers.
- Dr. Gil Einziger and Dr. Gabriel Scalosub, Ben Gurion University: the collaboration started when Dr. Einziger was a post-doc of mine at Politecnico di Torino and it has continued, involving also Dr. Scalosub. The collaboration, which is still active, focuses on network virtualization and analytical modeling of it.

I would also like to mention that I collaborated/collaborate with several Italian researchers working at other institutions, e.g., Prof. Matteo Sereno, Prof. Rossano Gaeta and Dr. Daniele Manini (all with University of Torino), Prof. Marco Gribaudo (Politecnico di Milano), Prof. Francesca Cuomo (University of Rome "La Sapienza"), Prof. Antonella Molinaro (Università Mediterranea di Reggio Calabria), Prof. Renato Lo Cigno (University of Trento), Prof. Antonia Tulino (University of Naples "Federico II"), and Dr. Riccardo Scopigno (Istituto Superiore Mario Boella - ISMB).

#### 2.4. Scientific responsibility (Principal Investigator) of competitive National and International research projects, awarded through a peer-review process

I am/was the Coordinator of 3 research projects, 2 of which at international level. I am the Principal Investigator of the Politecnico di Torino research unit in 3 H2020 research projects and I was the Principal Investigator of the research unit in 8 national research projects. Besides, I participated in many national and international research projects. To further confirm my successful activity in

project proposals and execution, Politecnico di Torino awarded me for my activity within research projects in 2016 and 2018.

Detailed information is reported below.

- Coordinator of the research project "MIMOSE - Multimode Service-oriented Connectivity for Mobile Users" (Sept. 2016–Apr. 2018). This project is funded by CRT within the project call "La Ricerca dei Talenti". It is based on a similar proposal that I submitted to the ERC Consolidator Call and that was rated Class A (fundable). In this project, I focus on the design of algorithmic solutions to promote local connectivity and content/service availability, rather than Internet-based services. F. Malandrino and M. Malinverno are contributing to this research activity.
- Coordinator of the international project "FLAG: Fundamental Results and Algorithmic Solutions for 5G Networks", (Feb. 2016–Feb. 2017) funded by Compagnia di San Paolo. It focused on 5G connectivity; in particular, I studied the performance of MIMO systems and full-duplex relay networks. The project contributed to further strengthen my collaboration with Monash University (Australia).
- Coordinator of the international project NPRP 5 - 782 - 2 - 322 Project "GAD – Green and Dense Wireless Access Networks", funded by the Qatar National Research Fund (Nov. 2012–Nov.2015). Project budget: 900,000 U.S. Dollars. The project developed and implemented optimization techniques for efficient resource allocation in dense, Cloud-RAN based, cellular networks. Dr. Giusi Alfano and Dr. Siyuan Zhou (during his PhD) worked on these topics. The project was the starting point of a very productive collaboration with Qatar University, with which I still actively collaborate.
- Principal Investigator and Task Leader of the EU H2020 5G PPP research project "5G-TRANSFORMER", H2020-ICT-07-2017 (July 2017–Dic. 2019). The project aims at the design and implementation of 5G network and services that meet the requirements of vertical industries, with particular attention to the use of the MEC paradigm. It involves 18 partners. Project budget: 7,985,583 Euro. Within the project, I'm the leader of Task 3.2, aimed at developing the algorithms for translating the vertical requirements into network/computing/storage requirements and in arbitrating the resources among different services. I also contribute to WP4, developing algorithms for optimally matching user services (VNF graphs) and (physical and virtual) network resources. Finally, in the implementation Work Package (WP5), I'm the leader of the automotive Proof of Concept (PoC), involving FCA, Ericsson, NEC, and Nextworks. The PhD students S. Tadesse and G. Avino are involved in these research activities, as well as Dr. C. Vitale and Dr. F. Malandrino.
- Principal Investigator and Task Leader of the EU H2020 research project "I-REACT: Improving Resilience to Emergencies through Advanced Cyber Technologies," H2020-DRS-1-2015 (June 2016–May 2019). Budget for Politecnico di Torino: 116,225 Euros. The project aims at developing solutions for the prediction and management of emergency situations due to natural disasters. Within the project, I design 5G-based network architectures and develop resource allocation algorithms to ensure connectivity to people fleeing from a disaster area. My work involves the use of disasters models, and geographical and mobile data analysis. Dr. Malandrino is also involved in this activity.
- Principal Investigator of the EU H2020 5G PPP research project "5G-Crosshaul: The 5G Integrated Fronthaul/Backhaul Transport Network," H2020-ICT-2014-2, Call: ICT- 14-2014 (July 2015–Dec. 2017). Project budget: 8,352,272 Euros. 5G-Crosshaul included 21 partners and aimed at designing and implementing an efficient transport network between fronthaul and backhaul. In particular, I developed energy efficient algorithms for the deployment of Virtual Network Functions and the routing of data traffic between them. The solution has been implemented by Nextworks, with which I closely collaborate, and was the fundamental solution in the EMMA demo during the project final review in March 2018, receiving high appreciation from the officer and the reviewers. S. Tadesse was involved in the project activities during her PhD.
- Principal Investigator and WP Leader of the regional project "LIMPID: Live Inducement of Multimodality by Promoting the Internet of Data" funded by Regione Piemonte, Italy (Jan. 2015–Oct. 2015). Budget for Politecnico di Torino: 176,652 Euros. The project focused on smart city services for mobile users. My work led to the development of a protocol and application for the safety of vulnerable users such as pedestrians and bicyclists. The activity also demonstrated the effectiveness of the developed application during real-life experiments on the Politecnico di Torino campus and in the nearby area. The project was also the opportunity to closely collaborate with Istituto Superiore Mario Boella (ISMB) and Magneti Marelli.
- Principal Investigator and WP Leader of the FAR project "WiSense: Dense and Reliable sensor networks for Energy Efficient Buildings", funded by MIUR, Italy (June 2013–Nov. 2014). This project aimed at developing a network of wireless sensors for indoor monitoring, as well as techniques for reducing energy consumption. My work focused on the definition of models for dimensioning the network to be deployed, establishing an optimal tradeoff between the level of accuracy of the



reconstructed signal and the number of sensing devices to be deployed. The project also included an experimental activity, with a real-world system deployed within the Nuovo Ospedale in Biella.

- Principal Investigator of the regional research project "IoT\_|\_ToI: Internet of Things: road Traffic over Internet," funded by Regione Piemonte, Italy (Apr. 2012–June 2014). Budget for Politecnico di Torino: 137,076 Euros. My activity within this project led to the creation of the living vehicular testbed at Politecnico di Torino, which I directed and for which I was responsible. The project has been selected by the European Commission's DG Regional and Urban Policy (DG REGIO) as one of the top successful projects that have been found through Regional funds all over Europe. The project was also the starting point of my collaboration with Magneti Marelli. C. Borgiattino worked on this project during his PhD.
- Principal Investigator and WP Leader for the regional research project "TA\_SL: Use of Sensor Nodes Network for Safety in Working Environments," funded by Regione Piemonte, Italy (July 2011–July 2013). Budget for Politecnico di Torino: 70,606 Euros. The project developed a sensor network for the monitoring of construction areas, with the aim to improve the workers' safety. My work focused on the network architecture design and the definition of algorithms for the detection of dangerous conditions through wireless sensing devices, including wearable sensors.
- Principal Investigator and WP Leader for the regional research project "MASP: Control of Protected Areas through Cognitive Monitoring Techniques", funded by Regione Piemonte, Italy (Sept. 2010—Feb. 2012). Budget for Politecnico di Torino: 88,240 Euros. My work led to the design of the sensor network for the monitoring of large areas such as urban and natural parks.
- Principal Investigator of the FIRB national project: "Virtual Immersive COMMunications (VICOM)", funded by the Italian Ministry for Research (MIUR) (2002- 2005). I led the activity of the Politecnico Research Unit, focusing on energy efficiency and quality of service provisioning in wireless networks.
- Scientific Principal Investigator for the PRIN 2003 national project "Protocols And cross-layer Techniques To achieve Energy-efficiency in Reconfigurable ad-hoc and sensor Networks (PATTERN)", funded by the Italian Ministry for Research (MIUR) (2003- 2005). The official PI for Politecnico di Torino was Dr. Maurizio Munafò as at that time my position at Politecnico did not allow me to appear as research unit PI.
- Principal Investigator for the national project "Reconfigurable Access module for MOBILE computiNG applications (RAMON)" funded by MURST (Cofinanziamento 2000) (2001-2002). My work focused on the development of flexible wireless interfaces for efficient channel access.
- Politecnico di Torino's Principal Investigator of the research activity on "Opportunistic Networks" within the European Network of Excellence NEWCOM++ (Jan. 2008—June 2011). My work focused on algorithm design for wireless ad hoc networks.
- Principal Investigator of the research activity on wireless networks, within the project "DIADI" funded by Regione Piemonte (2004—2006). My work focused on the use of the Wi-Fi and Bluetooth technologies.
- Principal Investigator of the Dept. of Electronics and Telecommunications of the research activity on wireless mesh networks, within the FAR project "Mesh Adaptive Home Wireless Nets (MEADOW)" (2006-2008). The project involved several partners, including ST-Microelectronics and developed a mesh network for indoor and outdoor connectivity. My work focused on the use of Wi-Fi to establish the mesh network wireless links and on the definition of data routing protocols.
- Scientific Responsible for the Joint Activity Project on Vehicular Communications (JPA3), and at Politecnico di Torino for the research activity on "Ad hoc and sensor networks" within the NEWCOM Project A (Mar. 2004-Sept. 2006).
- Principal Investigator of the research line entitled "Energy Efficiency" within the Centro di Eccellenza per le Radio COmunicazioni Multimediali (CERCOM), Politecnico di Torino (2001-2004). I was responsible for the research activities on energy-efficient wireless networks of the center.

In addition to the role played in the above projects, I participated in national and international research projects, as detailed next.

- "NEWCOM#", EU FP7 NoE (2012-2015)
- "FIGARO", EU FP7 STREP (2010-2013)
- "myMed", EU FP7 - INTERREG-ALCOTRA Program (2010-2013)
- "CARITAS", funded by MIUR (2009-2012)
- "Vehicle-to-Vehicle-to-Infrastructure Communications for Sustainable Urban Mobility (VICSUM)," funded by Regione Piemonte, Italy (2007-2009)
- FIRB project "PRIMO" funded by MIUR (2002-2005)
- CNR AGENZIA 2000, "Design and Configuration of Telecommunication Networks: Models for Stochastic Programming", funded by MIUR (2002)

- "Project 5%" (D.M. 21/01/97) "Multimedia", funded by MIUR (1999-2001).

## 2.5. Scientific responsibility of National and International research projects, ruled through partnership agreements with companies and/or public private bodies

- **Lead Principal Investigator** for the research contract "Multi-access Edge Computing" between TIM and Politecnico di Torino, in 2019;
- **Lead Principal Investigator** for the research contract "SAVE" between CRF-FCA and Politecnico di Torino, in 2019;
- **Lead Principal Investigator** for the research contract "Multi-access Edge Computing" between TIM and Politecnico di Torino, in 2018;
- **Lead Principal Investigator** for the research contract "Multi-access Edge Computing" between TIM and Politecnico di Torino, in 2017;
- **Lead Principal Investigator** for the research contract on "Interactive Driving" between Magneti Marelli and Politecnico di Torino, in 2013 and 2014;
- **Lead Principal Investigator** for the research contract on "Smart Connectivity" between Telecom Italia S.p.A. and Politecnico di Torino, in 2012 and 2013;
- **Lead Principal Investigator** for the research contract on wireless networks between INLAB-CSP and Politecnico di Torino, in 2003, 2004 and 2005. Since then, I have been collaborating with INLAB, which is active in software development and implementation, as well as prototype development, for advanced technology products;
- **Lead Principal Investigator** for the research contract between Alcatel-Politecnico di Torino on "Quality of Service in 802.11 and 802.11e WLANs," (2003-2004);
- **Principal Investigator** for the contract between SISTRA s.r.l. and Politecnico di Torino (2008);
- **Principal Investigator** for the research contract between Omnitel and Politecnico di Torino for the development of a UMTS simulator (2001).

## 2.6. Technology transfer: contributions to standardization, patents and relations with companies

### 2.6.1 Contribution to standardization

I have co-authored the following documents as contributions to the ETSI MEC standardization activity:

- a. MEC(18)000055; Overview of network slicing concept in 3GPP
- b. MEC(18)000056; Overview of network slicing concept in NGMN
- c. MEC(18)000057; Overview of network slicing concept in ONF.

I'd like also to mention that I contributed to the IEEE 5G initiative with the following paper: C. Chiasserini, A. Magnan, "5G for the Automotive Domain", March 2018, <https://5g.ieee.org/images/files/pdf/applications/5G-for-the-Automotive-Domain030518.pdf>

Mr. Magnan was a former employee of Ford, and he is now with Verizon.

### 2.6.2 Patents

I have co-authored the following patents/pending patents:

1. Conte, C. Casetti, C.F. Chiasserini, "Method for Providing Traffic Differentiation in a Wireless LAN Environment and Corresponding Wireless LAN Station," United States Patent 20050185580, 2005; European Patent 1566922, 2004;
2. A. Conte, P. Dauchy, C. Casetti, C.F. Chiasserini, "A Method for Admission Control for Mobile Networks, an Admission Controller and a Communication System Therewith," European Patent 1694088 / United States Patent 20060189322, 2005;
3. M. Caretti, C.F. Chiasserini, G.M. Dell'Aera, Z. Limani, B. Melis, "Scheduling Method and System for Fourth Generation Radio Mobile Networks," WO 2016041604 A1, 2016;
4. A joint patent with Qatar University on a scheme for physical-layer security has been submitted: A. Badawi, T. Khattab, T. Elfouly, C.F. Chiasserini, A. Mohamed, D. Trincherro, "Method for Generating a Secret Key for Encrypted Wireless Communications," US provisional Patent Application No. 62339797, May 2016;

5. A. Abdellatif, A. Mohamed, C.F. Chiasserini, "Data-specific Transceiver Design for efficient mobile-Health IoT Devices," currently in Provisional Patent status (full patent application is on going);
6. A. Badawi, T. Khattab, T. Elfouly, C.F. Chiasserini, A. Mohamed, D. Trincherio, "A Non-coherent High Performance Ultra-wideband (UWB) Receiver", submitted to the IPR University Office.

### 2.6.3 Relation with companies

1. I have close collaborations with **TIM** (see joint patent reported above, funded PhD scholarship and research contract below). We also collaborate through MSc students' theses, as well as within EU and national projects and the newly established **Joint Lab on 5G**.
2. I closely collaborate with **FCA** through research contracts, EU projects and MSc students' theses. I also co-organized a **workshop with FCA on "5G Technology in the Automotive Domain," FCA Auditorium**, Orbassano, Italy, July 5 2017. The workshop featured talks by academic and industrial experts (including AMAZON, Ericsson, Qualcomm).
3. I have close collaboration with **Magneti Marelli**, through regional projects, research contracts, research scientist grants ("Assegni di ricerca"), and MSc students' theses.
4. Within the two H2020 5G-PPP projects, I have been collaborating with several companies, in particular **Nextworks** (Pisa, Italy), **NEC Germany** (see my EuCNC 2016, IEEE ICC 2017 Workshop and IEEE CCNC 2017 papers), **Ericsson and FCA**. Indeed, **both 5G-PPP projects target specifically technology transfer and the evolution of 5G products**.
5. Since May 2011, I am the Reference person for the scientific collaboration between Istituto Superiore Mario Boella (ISMB) and the Telecommunications Networking Group at Politecnico di Torino. ISMB is an internationally-renown research center focusing on technology transfer activities.
6. Since 2003 and till 2014, I closely collaborated with CSP, formerly the research center of Regione Piemonte, whose focus is on technology transfer and product prototyping. The collaboration **enabled the commercial exploitation of solutions jointly developed by my research group and CSP**, especially in the field of wireless mesh networks and vehicular networks (see also my publications co-authored by CSP researchers).

## 3. National and international reputation and professional activity for the scientific community

### 3.1. Participation in the Editorial Board of Journals with international reputation

- I am the **Editor in Chief of the Elsevier Computer Communications journal** (Jan. 2019–present)
- I served on the **Executive Editorial Committee (EEC) for the IEEE Transactions on Wireless Communications** (June 2016 – Sept. 2018), which includes 9 top international experts in wireless communications and networking and supports the EiC with the journal direction.

Also, I currently serve on:

- the **Editorial Board of the IEEE/ACM Transactions on Networking** (August 2017 – present)
- the **ACM MobiHoc Steering Committee** (October 2019 – present).

Furthermore, I served in the Editorial Board of:

- **IEEE Transactions on Mobile Computing** (Oct. 2012 – Sept. 2018)
- **Computer Communications Journal (ELSEVIER)** (Nov. 2008 – Dec. 2018)
- **Transactions on Emerging Telecommunications Technologies (ETT)** (July 2016 – Sept. 2018).
- **IEEE Transactions on Wireless Communications** (Jan. 2010 – Mar. 2015)
- **IEEE Wireless Communications Magazine** (Apr. 2009 – Sept. 2012)

- **IEEE Communications Letters as an Editor** (Mar. 2004 – Mar. 2010)
- **IEEE Communications Letters as a Senior Editor** (Mar. 2010 – Mar. 2012)
- **IEEE Communications Letters, as Member of the Advisory Board-SWAT Team** (Apr. 2012 – Dec. 2015)
- Ad Hoc Networks Journal (ELSEVIER) (June 2002 – Sept. 2012).

I have been **Guest Co-editor** for the following **7 special issues**:

- Special Issue of Journal of Communications and Networks (JCN) on Mobile Ad Hoc Networks (vol. 6, no. 4, Dec. 2004 - doi: 10.1109/JCN.2004.6596848);
- Special Issue of ACM/Kluwer Wireless Networks Journal (WINET) on Selected Papers of MSWiM 2003 (vol. 11, no. 5, Sept. 2005 - doi:10.1007/s11276-005-3519-4);
- Special Issue of Performance Evaluation on QoS in ad hoc and sensor networks (vol. 64, no. 5, June 2007 - doi:10.1016/j.peva.2006.08.003);
- Special Issue of Computer Networks on Performance of Wireless Networks (vol. 52, no. 1, Jan. 2008 - doi:10.1016/j.comnet.2007.09.010);
- Special Issue of Performance Evaluation on Modeling and Analysis of Wireless Networks (vol. 66, no. 3-5, Mar. 2009 - doi: 10.1016/j.peva.2008.12.001);
- Special Issue of IEEE Wireless Communications Magazine on Cognitive Radio Networks: A Practical Perspective (vol. 19, no. 4, Aug. 2012 - doi:10.1109/MWC.2012.6272417);
- Special Issue of Computer Communications (ELSEVIER) on Mobile Ubiquitous Sensing (vol. 65, July 2015).

### 3.2. Official research positions as Scholar/Visiting Professor in international highly qualified universities and research centres

- In 2004 and, then, since 2012 I am a **Research Associate with the National Research Council (CNR)**, IEIIT, Torino, Italy, working on sensor networks, MIMO, full-duplex networks, and opinion dynamics.
- June – Dec. 1995: **Visiting Scholar**, Department of Electrical and Computer Engineering, University of Massachusetts at Amherst (UMASS), MA, USA, working on wireless networks security.
- Aug. 1998 – Dec. 1999: **Visiting Scholar**, Center for Wireless Communications (CWC), California, San Diego, CA, USA, working on energy efficiency of communication devices.
- Feb. – Oct. 2000: **Post-doctoral Fellow**, Department of Electrical and Computer Engineering, University of California, San Diego, CA, USA, working on energy efficiency in wireless networks.
- July – Oct. 2001: **Visiting Assistant Professor**, Department of Electrical and Computer Engineering, University of California, San Diego, CA, USA working on energy efficiency in wireless networks, Bluetooth networks, and power allocation.
- July – Sept. 2002: **Visiting Research Scientist**, Department of Electrical and Computer Engineering, University of California, San Diego, CA, USA, working on cooperation in wireless networks.
- July – Sept. 2003: **Visiting Research Scientist**, Department of Electrical and Computer Engineering, University of California, San Diego, CA, USA, working on cooperation in wireless networks.
- July – Sept. 2012: **Visiting Professor**, Department of Electrical and Computer Systems Engineering, Monash University, Melbourne, Australia, working on network coding and SDN.
- June – Sept. 2016: **Visiting Professor**, Department of Electrical and Computer Systems Engineering, Monash University, Melbourne, Australia, working on MIMO and full-duplex relay networks.

### 3.3. Prizes and awards for scientific activity and project activity

- I am an **IEEE Fellow** (class of 2018). Citation: "for contributions to energy efficiency and cooperation in wireless networks".
- **"Best Paper Award"** at SPACOMM 2014, for the paper "Estimation Quality of High-dimensional Fields in Wireless Sensor Networks".

- **"Best Paper Award"** at ADHOC-NOW 2014, for the paper "A Passive Solution for Interference Estimation in WiFi Networks".
- **"Best Paper Award"** at IEEE WoWMoM 2016, for the paper "Downlink Transmit Power Setting in LTE HetNets with Carrier Aggregation".
- **"Top Paper Award"** at the ACM CoNEXT 2016 Cloud-Assisted Networking (CAN) Workshop, for the paper "How Close to the Edge? Delay/Utilization Trends in MEC".
- **"Best Paper Award"** at the Wireless Telecommunications Symposium (WTS) 2018, for the paper "Automated Class-based Compression for Real-time Epileptic Seizure Detection".
- **"Best Paper Award Runner-up"** at ACM MSWiM 2016, for the paper "Effective Selection of Targeted Advertisements for Vehicular Users".
- **"Top Three Outstanding Papers"** at ACM MSWiM 2009, for the paper "When Services Go Local".
- **"Top Three Outstanding Papers"** award at ACM MobiCom '99, for the paper "Pulsed Battery Discharge in Communication Devices".
- **"Best Presentation in Session"** award at IEEE INFOCOM 2018, for the paper "Joint VNF Placement and CPU Allocation in 5G".
- **"Elsevier Three Top Cited Papers"** recognition in 2004, for the paper "Architectures and Protocols for Mobile Computing Applications: A Reconfigurable Approach".
- My paper "Content Discovery and Caching in Mobile Networks with Infrastructure," was selected as **Research Highlight of the IEEE Transactions on Computers**, 2012.
- **"Best Editor Award"** 2010, from the Board of the Ad Hoc Networks journal (Elsevier).
- **"Best Young Assistant Professor"** ("Giovani Ricercatori") prize in 2006, assigned by Politecnico di Torino to the top 30 Assistant Professors, among more than about 300 Assistant Professors (I then became Associate Professor in 2006).
- **Ranked among the 15 "Top Researchers"** in 2015 by Politecnico di Torino over all professors (assistant, associate and full professors).
- **Award from CRT** in recognition of my project for the **2014 European Research Council (ERC) Call, Consolidator Grant**, which was evaluated as fundable (Class A), 2016.
- **Award from Politecnico di Torino** for my research within H2020 projects, in 2016.
- **Award from Politecnico di Torino** for my activity within research projects and research contracts.
- In 2016, I was **selected among the 100 most successful female scientists in Italy in the whole field of Science, Technology, Engineering and Mathematics (STEM)** by the "Osservatorio di Pavia" and the journalism association Gi.U.Li.A.. The study was supported by the European Commission (<http://dev.100esperte.it>).
- I am in the list of top Italian scientists kept by VIAAcademy.
- In 2019, I was selected to appear in the list of **"N2Women: Stars in Computer Networking and Communications"**.

### 3.4. Memberships

- I am an IEEE Fellow. I am also a member of the IEEE Communications Society and a member of the IEEE Ad Hoc And Sensors Technical Committee and of the IEEE 5G Technical Community;
- I am a Member of ACM since 2016.

### 3.5. Participation in international conferences as a distinguished invited speaker and participation in the scientific committees of International Conferences

#### 3.5.1. Invited talks and tutorials

- **Invited speaker** at the **8th IEEE Communication Theory Workshop**, Aptos, California, May 1999, on "Algorithms for Efficient Battery Discharge in Wireless Communication Devices"
- **Invited speaker** at the **17th IEEE Annual Computer Communications Workshop**, Santa Fe, New Mexico, Oct. 2002, on "Algorithms for Bluetooth Topology Formation"
- **Invited speaker** at the **4th COST 263 International Workshop on Quality of Future Internet Services (QoIFS)**, Stockholm, Sweden, Oct. 2003, on "Providing Transport-Layer Fairness in 802.11 WLANs"
- **Invited Lecture** at the **UWB Workshop**, Torino, Italy, Nov. 2004, on "Wireless Sensor Networks"
- **Tutorial** on "Wireless Ad Hoc Networks", at **IEEE ICC 2004**, Paris, France, June 2004
- **Tutorial** on "Wireless Ad Hoc Networks", at **IEEE ICC 2005**, Seoul, Korea, May 2005

- **Keynote speaker at the Med-Hoc-Net** Conference, June 2012
- Invited presentation at the Network2020 Experts Workshop, Stuttgart, Germany, Feb. 2014
- **Invited Speaker at IEEE ICNC 2015**, Anaheim, LA, USA
- **Invited Speaker** at the 27th **IEEE Annual Computer Communications Workshop** (IEEE CCW), Panel on Vehicular Networking and Disaster Area Coverage, Philadelphia, PA, Nov. 2014. The IEEE CCW is the flagship workshop of the Technical Committee on Computer Communications (TCCC) of the IEEE Communications Society
- **Invited speaker** at the Italy-Taiwan joint workshop on Smart Cities and Smart Mobility, organized by CNR in Rome (February 26-27, 2015)
- **Keynote speaker at the ACM CHANTS 2016**, the 11th MobiCom Workshop on Challenged Networks, New York, NY, October 2016
- **Keynote speaker at the Algotel & CoRes** conference (which focuses on algorithms and network protocol design and evaluation), Quiberon, France, May 2017
- **Invited speaker at the IEEE 5G Summit**, "5G for Connected Cars," Thessaloniki, Greece, July 2017
- **Invited speaker** at the **IEEE 5G Summit**, "The 5G-Crosshaul Project," Thessaloniki, Greece, July 2017
- **Invited speaker** at the **IEEE 5G Summit**, "The 5G-TRANSFORMER Project," Thessaloniki, Greece, July 2017
- I have been invited (i) to give presentations at prestigious universities and research centers, and (ii) to present technical papers (**invited papers**) to several IEEE and ACM conferences, the most recent one being **IEEE WoWMoM 2018**
- I delivered presentations of my work at several conferences, such as: IEEE ICUPC '98, IEEE ICC '99, IEEE Milcom '99, ACM MobiCom '99, IEEE Milcom 2000, IEEE WCNC 2000, IEEE WCNC 2001, IEEE VTC 2001, IEEE INFOCOM 2001, IEEE INFOCOM 2002, IEEE MILCOM 2002, EWC 2002, HICSS 2003, IEEE VTC 2003, IEEE ICC 2005, ISWCS 2009, ACM MobiHoc 2009, IEEE INFOCOM 2011, IEEE ICNC 2015, and I will attend and present my paper this year at IEEE INFOCOM 2018.

### 3.5.2. Participation in scientific and organization committees of International Conferences

I was **General Chair** of the following international conferences:

- The 9th ACM International Symposium on Modeling, Analysis and Simulation of Wireless and Mobile Systems (MSWiM 2006), Torremolinos, Malaga, Spain, Oct. 2006
- The 10th ACM International Symposium on Modeling, Analysis and Simulation of Wireless and Mobile Systems (MSWiM 2007), Chania, Greece, Oct. 2007
- The 9th Annual Conference on Wireless On demand Network Systems and Services (IEEE/IFIP WONS 2012), Courmayeur, Italy, Jan. 2012.

• I was **Technical Program Committee Co-chair** of:

- The 6th ACM International Workshop on Modelling, Analysis and Simulation of

Wireless and Mobile Systems (MSWiM 2003), San Diego, CA, Sept. 2003

- The 7th ACM International Symposium on Modelling, Analysis and Simulation of Wireless and Mobile Systems (MSWiM 2004), Venice, Italy, Oct. 2004

- The 8th ACM International Symposium on Modelling, Analysis and Simulation of Wireless and Mobile Systems (MSWiM 2005), Montreal, Canada, Oct. 2005

- The Annual Conference on Wireless On demand Network Systems and Services (IEEE/IFIP WONS 2006), Les Menuires, France, Jan. 2006

- The 10th ACM International Symposium on Mobile Ad Hoc Networking and Computing (**ACM MobiHoc 2009**), New Orleans, LA, USA, May 2009

- IEEE VTC-Fall, Track on Ad Hoc and Sensor Networks, San Francisco, CA, Sept. 2011
- IEEE International Conference on Distributed Computing in Sensor Systems (DCOSS), Vice Chair for the Algorithms and Performance Analysis Track, Marina Del Rey, CA, May 2014
- First IEEE International Forum on Research and Technologies for Society and Industry, Turin, Italy, Sept. 2015
- Workshop PMF-Win, IEEE ISWCS, Brussels, Belgium, Aug. 2015
- Poster Session of the 22nd ACM International Conference on Mobile Computing and

Networking (ACM MobiCom 2016), New York City, USA, Oct. 2016

- Poster and Demo Session of the 10th ACM International Workshop on Wireless Network Testbeds, Experimental evaluation & Characterization (ACM WiNTECH 2016), in conjunction with ACM MobiCom 2016, New York, NY, USA, Oct. 2016

- ACM CoNEXT Workshop 2018 First International Workshop on Experimentation and Measurements in 5G (EM-5G), Heraklion (Greece), Dec. 2018.

- Poster and Demo Session of ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc 2019), Catania, Italy, July 2019.

- I am a member of the UBICOMM Steering Committee series (ISSN: 2308-4278, ISBN: 978-1-61208-598-2).
- I am/was **Area TPC Chair for IEEE SECON 2013 and IEEE INFOCOM 2013, 2014, 2015, 2018, and 2019.**
- I was **Panel Co-Chair for the prestigious conferences ACM MobiHoc 2016 and IEEE INFOCOM 2019.**
- I was on the **IEEE INFOCOM 2018 Best Paper Award Committee.**
- I was registration co-chair for ACM SIGCOMM 2010, New Delhi, India.
- I was on the Technical Program Committee Member of many international leading conferences, including:

- IEEE INFOCOM from 2005 to present
- ACM MobiHoc 2006, 2007, 2010, 2013, 2014, 2015, 2016, 2017, 2018
- IEEE/ACM MobiCom 2004, 2005 and 2006
- IEEE SECON 2013, 2014
- Cloudification of the Internet of Things (CIoT) 2016
- IEEE ICC (since 2003)
- IEEE GLOBECOM (since 2003)
- IEEE VTC (since 2003).

- I was the **organizer of a special session** at the European Wireless Technology conference (EuWiT), Rome, Italy, September 2009, and at the European Wireless Conference (EWC 2002), Florence, Italy, February 2002.
- I was the **organizer of the Poster Session** at the 7th ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc 2006), Florence, Italy, May 2006.
- I was a Member of the National Committees for the PhD Awards "GTTI Prize 2016", organized by the Italian Telecommunication and Information Technology Group.

## 4. Institutional Offices and Commissions of Thrust

### 4.1 Institutional Roles in Universities

- Mar. 2018 – present: **Rector's Delegate for Alumni and Career Orientation**

- Mar. 2018 – present: **Member of the Rector’s Council, chaired by the Rector and including 14 members (Rector, Pro-rector, Vice-rectors, Rector’s Delegates, and the Managing Director)**. The Council meets every week and aims to **discuss the main issues regarding the university government**, to be then further discussed within the Senate and the Board of Governors
- April 2018 – present: **Vice-president of the Board of Directors (“Consiglio di Amministrazione”)** of the **"Collegio Renato Einaudi"**, appointed by the Rector of Politecnico di Torino.
- Oct. 2012 – Sept. 2018: **Member of the ETF (Electronics, Telecommunications and Physics) Teaching Board Council of Politecnico di Torino (“Giunta di Collegio ETF”)**
- Nov. 2014 – Mar. 2015: **Co-leader of the Department Committee for the definition of the new curricula of the MSc Program in Computer and Communication Networks and for the creation of a new MSc program in ICT for Smart Societies**, Politecnico di Torino
- Oct. 2012 – Sept. 2015: **Coordinator (“Referente” del Corso di Laurea” / “Presidente del Corso di Laurea”)** of the **MSc Program in Computer and Communication Networks**, Politecnico di Torino
- Oct. 2012 – Sept. 2018: **Responsible for the Telecommunications Area within the Teaching Board of the Department of Electronics and Telecommunications (“Commissione Didattica di Dipartimento”)**, Politecnico di Torino
- Oct. 2013 – present: **Member of the PhD Board in Electrical, Electronic and Communications Engineering (“Collegio docenti del Dottorato in Ingegneria Elettrica, Elettronica e delle Comunicazioni”)** at Politecnico di Torino
- Oct. 2015 – Sept. 2018: **Coordinator (“Referente del Corso di Laurea” / “Presidente del Corso di Laurea”)** of the **MSc Program in Communications and Computer Networks**, Politecnico di Torino. While I have been the coordinator, the MSc Program has **doubled the number of enrolled students**. The MSc program was also evaluated **very positively** by the External Evaluation Board (“Nucleo di Valutazione”) nominated by the university (**internal CEV procedure for which the MSc Program was selected**)
- Jan. 2017 – Sept. 2018: **Member of the ETF Teaching Board Committee for the definition and organization of Workshops** (i.e., special lab projects) devoted to MSc students
- Jan. 2017 – June 2017: **Member of the Teaching Innovation Committee of the ETF Teaching Board** (Electronics, Physics and Communication Engineering), Politecnico di Torino
- Oct. 2012 – Sept. 2018: **Organization of Promotion Activities for the MSc Programs in the area of Telecommunications at Politecnico di Torino.**
- Sept. 2018 – present: **Coordinator of the ETF Teaching Board Committee for Relations with Industries.**

#### 4.2 Offices in the Scientific Advisory Boards of public and private institutions, with scientific and technology transfer aims

- Feb. 2014 – present: **Member of the Scientific Committee of the Bruno Kessler Foundation (FBK)**, Trento, Italy. FBK is one of the most prestigious research centers in Europe. It includes over 350 researchers, 220 among Thesis students, PhD students, post-doctoral fellows, and visiting professors, 7 research centers and 30 among spin-offs, start-ups and subsidiaries (FBK web site: [www.fbk.eu](http://www.fbk.eu)).
- Feb. 2014 – present: **Member of the Networld2020 Expert Group (the EU Technology Platform for networks and services)**. Only a group of selected researchers have been admitted. Within this initiative, I constantly provide input to the documents on 5G&Beyond technologies that the group releases. The most recent one is the Strategic Research and Innovation Agenda document, which has been approved by the Steering Board of Networld 2020 and is now an official document of the ETP. It has been published at: <http://www.networld2020.eu/sria-and-whitepapers/>

#### 4.3 G7 – ICA Committee

Mar.-Oct. 2017: Member of the Editorial Committee of the Book for the G7-ICA (Infrastructure Consortium for Africa), entitled: “Toward Smart and Integrated Infrastructure for Africa - An agenda for digitalisation, decarbonisation and mobility,” by E. Colombo, P.



Leone, C. F. Chiasserini, P. Boccardo, M. Taisch, F. Cheli, ISBN 9788894122640, presented in Rome on Oct. 20, 2017, within the initiatives for the Italian G7 Presidency 2017.

#### 4.4 Participation to project evaluation boards

- Referee in the evaluation of several international grant applications (calls promoted by government and private institutions in Ireland, Luxemburg, Georgia, Greece, Cyprus, France, Austria).
- External reviewer in the final evaluation of COST Action 290 "Traffic and QoS Management in Wireless Multimedia Networks (WI-QOST)", Tampere, Finland, May 2008.

### 5. Teaching activity

Since 2001, I have been instructor for 2-3 undergraduate and graduate courses per year at Politecnico di Torino, for which I also prepared the teaching material. I consistently achieved high scores during internal teaching reviews. I also held several Specializing Master (II Level Master) courses at Politecnico di Torino and courses for PhD students. All courses were held in English. Finally, I carried out several institutional services and organized activities devoted to students.

#### Courses within PhD Programs

- In 2014, I held a PhD course at the 1st EIT ICT Summer School on Cyber Physical System, Trento, Italy, July 2014.
- In 2016, I held a PhD course at Monash University entitled "From WiFi to LTE: A Converging Path Toward 5G", Melbourne (Australia), August 2016.
- In Dec. 2017, I gave a PhD-level course at IIT Kharagpur (India) on 5G Systems.

#### Courses within Summer Schools

- In July 2017 and 2018, I held a course on sensor networks within the Summer School organized by Politecnico di Torino, entitled "Building Tomorrow Society: IoT Applications & Data Management".

## List of Publications

### Journal Papers

1. Avino, Giuseppe; Bande, Paolo; Frangoudis, Pantelis A.; Christian~vitale, ; Casetti, CLAUDIO ETTORE; Chiasserini, Carla Fabiana; Gebru, Kalkidan; Ksentini, Adlen, A MEC-based Extended Virtual Sensing for Automotive Services, in: IEEE TRANSACTIONS ON NETWORK AND SERVICE MANAGEMENT, - Preprint -
2. Chiaraviglio, Luca; Salsano, Stefano; Blefari Melazzi, Nicola; Sidoretti, Giulio; Rossetti, Simone; Chiasserini, Carla Fabiana; Malandrino, Francesco; D'Andreagiovanni, Fabio, Algorithms for the Design of 5G networks with VNF-based Reusable Functional Blocks Annals of Telecommunications, in: ANNALES DES TÉLÉCOMMUNICATIONS, - Preprint -
3. Singhal, Chetna; Chiasserini, Carla Fabiana; Casetti, CLAUDIO ETTORE, EMB: Efficient Multimedia Broadcast in Multi-tier Mobile Networks, in: IEEE TRANSACTIONS ON VEHICULAR TECHNOLOGY, - Preprint -
4. Malandrino, Francesco; Chiasserini, Carla Fabiana; Einziger, Gil; Scalosub, Gabriel, Reducing Service Deployment Cost Through VNF Sharing, in: IEEE-ACM TRANSACTIONS ON NETWORKING, - Preprint
5. Alfano, G.; Nordio, A.; Chiasserini, C. F., SINR and Multiuser Efficiency Gap between MIMO Linear Receivers, in: IEEE TRANSACTIONS ON WIRELESS COMMUNICATIONS, - Preprint –
6. Chiasserini, Carla Fabiana, A Message from the New Editor-in-Chief, in: COMPUTER COMMUNICATIONS, 2019.
7. Malandrino, Francesco; Chiasserini, Carla Fabiana; Casetti, Claudio; Landi, Giada; Capitani, Marco, An Optimization-enhanced MANO for Energy-efficient 5G Networks, in: IEEE-ACM TRANSACTIONS ON NETWORKING, 2019.
8. Abdellatif, Alaa; Mohamed, Amr; Chiasserini, Carla Fabiana; Tlili, Mounira; Erbad, Aiman, Edge Computing For Smart Health: Context-aware Approaches, Opportunities, and Challenges, in: IEEE NETWORK, 2019.
9. Chiasserini, Carla Fabiana; Casellas, Ramon; Baranda, Jorge; Nuñez-Martinez, Jose; Xavier Salvat Lozano, Josep; Bilal Chundrigar, Shahzoo; Mourad, Alain A. M.; Landi, Giada; Talat, Samer T.; de la Oliva, Antonio, Experimental framework and evaluation of the 5G-Crosshaul Control Infrastructure, in: COMPUTER STANDARDS & INTERFACES, 2019.
10. Zhou, Siyuan; Nordio, Alessandro; Chiasserini, Carla-Fabiana; Alfano, Giuseppa, MIMO Relay Networks: Scheduling and Outage Probability, in: IEEE WIRELESS COMMUNICATIONS LETTERS, 2019.
11. Malandrino, Francesco; Chiasserini, Carla Fabiana; Casetti, CLAUDIO ETTORE; Chiaraviglio, Luca; Senacheribbe, Andrea, Planning UAV Activities for Efficient User Coverage in Disaster Areas, in: AD HOC NETWORKS, 2019.
12. Malandrino, Francesco; Chiasserini, Carla Fabiana; Landi, Giada, Service Shifting: a Paradigm for Service Resilience in 5G, in: IEEE COMMUNICATIONS MAGAZINE, 2019.
13. Mahmood, Ahsan; Casetti, CLAUDIO ETTORE; Chiasserini, Carla Fabiana; Giaccone, Paolo; Harri, Jerome, The RICH Prefetching in Edge Caches for In-Order Delivery to Connected Cars, in: IEEE TRANSACTIONS ON VEHICULAR TECHNOLOGY, 2019.
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