

PERSONAL INFORMATION

Prof. Marco Mellia



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[Redacted] | Nationality Italian

WORK EXPERIENCE

16/3/2019 - present

Full Professor

Politecnico di Torino, Electronics and Telecommunications Department, www.polito.it

▪ Computer Networks, Big Data, Cybersecurity, Machine Learning, Privacy, Data Science
Business or sector Education and research

1/10/2014 – present

Coordinator of the SmartData@PoliTO center

Politecnico di Torino, Interdepartment Center– www.smartdata.polito.it

The [SmartData@PoliTO](http://www.smartdata.polito.it) center focuses on Big Data technologies, Data Science, Machine Learning and Artificial Intelligent approaches. It blends interdisciplinary people and competences from different domains to provide cross-domain solutions to the widest spectrum of knowledge discovery challenges, by leveraging advanced expertise in data science, from data management, to data modelling, analytics, and engineering. It is a well-recognized centre where experts in methodologies, and domain experts from various disciplines work in a single space, facing both theoretical problems and helping companies toward applications.

Business or sector Research and Technology Transfer

10/6/2019 - 11/7/2019

Visiting Faculty - DCC | Departamento de Ciência da Computação - UFMG Universidade Federal de Minas Gerais - <https://www.dcc.ufmg.br/dcc/> - *From Measurements to Smarter Cities: Learning Global Mobility Patterns, Users' Interests and Behaviors from the Network to Support Smarter Cities*
Founded by Compagnia di San Paolo - "Progetti congiunti di ricerca con università prestigiose"

1/10/2014 – 15/3/2019

Associate Professor

Politecnico di Torino, Electronics and Telecommunications Department, www.polito.it

▪ Computer Networks, Big Data, Cybersecurity, Machine Learning, Privacy
Business or sector Education and research

1/2/2017 - present

Ermes Cyber Security SRL

Co-founder

Together with Dr. Stefano Traverso and Dr. Hassan Metwalley he founded Ermes Cyber Security SRL, a start-up which provides advanced anti-tracking solutions for business scenarios based on Machine Learning and Artificial Intelligence. He leads the development team, and contributes substantially to the product design, development and deployment. He also leads the traffic analysis tasks aimed at identifying trackers.

Business or sector CyberSecurity, Artificial Intelligence

15/6/2017 – 15/7/2017

Visiting Professor

Cisco System, San Jose, California. www.cisco.com

Collaboration on Cybersecurity topics to design novel solutions to secure DNS system using Machine learning approaches

Business or sector Computer Networks, Cybersecurity, Artificial Intelligence

14/6/2012 – 15/8/2012

Visiting Professor

Narus Inc, Sunnyvale, California

- Collaboration on Cybersecurity topics to design novel solution based on Big Data solutions
Business or sector Computer Network, Cybersecurity, Artificial Intelligence

7/7/2011 – 8/9/2011

Visiting Professor

Narus Inc, Sunnyvale, California

- Collaboration on Cybersecurity topics to design novel solution based on Big Data solutions
Business or sector Computer Networks, Cybersecurity, Artificial Intelligence

1/4/2001 – 30/9/2014

Assistant Professor

Politecnico di Torino, Electronics and Telecommunications Department, www.polito.it

- Computer Networks, System Performance, Network Monitoring

Business or sector Education and research

EDUCATION AND TRAINING

1/11/1997 - 13/2/2001

PhD in Electronics and Telecommunications Engineering

Politecnico di Torino

1/11/1990 - 12/2/1997

Laurea Electronics and Telecommunications Engineering – 110 with laudem

Politecnico di Torino

PERSONAL SKILLS

Mother tongue(s)

Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C2	C2	C2	C2	C2
French	B2	B2	B1	B1	B1

Organisational / managerial skills

- Leadership - currently responsible for the SmartData@PoliTO inter-department centre www.smartdata.polito.it of more than 80 professors, researchers, PhD and Master Students

Job-related skills

- Excellent communication and teaching skills - currently responsible for 3 master classes

Detailed CV

CV in brief

I received a Ph.D degree in Telecommunications Engineering in 2001 from Politecnico di Torino. In 1999, I was with the Computer Science department at **Carnegie Mellon University**, in Pittsburgh. In 2002 I visited the **Sprint Advanced Technology Laboratories, Burlingame, CA**, where I started working on Internet traffic measurement field, topic that I keep working on with enthusiasm. In summer 2011 and 2012 I visited **Narus Inc., Sunnyvale, California**, where I collaborated to the definition of novel algorithms and tools for Internet traffic classification. In the summer 2017, I visited **Cisco System, (San Jose, CA)** working on innovative cybersecurity solutions.

Current Roles

I'm **Full Professor** and **coordinator of the SmartData@PoliTO** inter-department center in Politecnico di Torino, and part of the **High-Performance Computing board** of Politecnico. I coordinate **my research group** that includes 3 researchers, 2 postdocs, and 8 PhD students. I'm the **co-founder of Ermes Cyber Security**, a Spin-off and startup providing B2C solutions to protect companies from web-tracking.

Entrepreneurship

Academic Qualification

I hold a National Scientific Qualification in **Computer Science, Computer Engineering** and

Publications	<p>Telecommunications.</p> <p>In about 20 years of academic activity, I published more than 100 journal papers appeared on prestigious journals (among which Journal of the ACM, IEEE Transactions on Information Theory, ACM/IEEE Transactions on Networking, IEEE Transaction on Multimedia, IEEE Transaction on Parallel and Distributed Systems, IEEE Transactions on Computers, ACM Computer Communication Review, ACM Transactions on the Web), and presented more than 200 papers in the most prestigious conferences (including ACM SIGCOMM, ACM SIGMETRICS, ACM WebSCI, ACM WWW, ACM IMC, ACM CoNEXT, IEEE INFOCOM, IEEE GLOBECOM, IEEE ICC).</p>
Citations	<p>Currently (July 2020), Google scholar ranks me as the sixth most cited professor in Politecnico di Torino. My works got about 11.000 citations. My H-Index is 54 considering all my career.</p>
Patents	<p>I hold 11 patents in the area of traffic monitoring and analysis, and of Cybersecurity.</p>
Memberships	<p>I'm currently part of the Editorial Board of ACM Computer Communication Review (ACM CCR), IEEE Transactions of Networks and Service Management, and Elsevier Computer Networks. I've organized special issues of Journals and served as reviewer for most prestigious journals in my area. I serve as Steering Committee member of ACM CoNEXT, and in the past of IEEE/IFIP Network Traffic Measurement and Analysis Conference (TMA). I was Member of the ACM SIGCOMM Doctoral Dissertation Award Committee. I chaired conferences, workshops, organized PhD Schools, and tutored several PhD students, who are now all working in top universities or companies in the ICT field. I served as TPC member of more than 60 conferences, including ACM SIGCOMM, ACM IMC, ACM CoNEXT, ACM SAC, IEEE INFOCOM, IEEE ICC, IEEE GLOBECOM. I served in reviewers' panel for the selection process of European Projects (call FIRE), of Italian PRIN and FIRB projects. I'm a Senior member of IEEE, and member of the ACM.</p>
Awards	<p>My works and my students have been awarded with the Best Paper at ITC 2018, Best PhD dissertation GTTI Award for PhD Theses in the field of Communication Technologies, winner of the Applied Networking Research Prize 2017, Best ACM CCR paper 2016 (invited for presentation at SIGCOMM 2016), Best Demo Award IEEE WOWMOM 2016, Best Student Paper at ITC 2015, Best Paper award at IEEE ICDCS 2015, Best Paper award at IEEE TRAC 2015, Best Paper award at ACM CoNEXT 2013, Best Paper award at IEEE Peer to Peer 2012, and winner of the IRTF Applied Networking Research Prize in 2013.</p> <p>For six year in a row, from 2006 to 2011, I won the prize "Giovani Ricercatori" ("Young Assistant Professor") assigned by Politecnico di Torino to the top 30 Assistant Professors (among more than about 300 Assistant Professors).</p>
Industrial collaborations	<p>I am collaborating and collaborated with several companies in the past, including Huawei, Narus Inc, Cisco Systems, Telefonica, Alcatel Lucent, NEC, Telecom Italia, Vodafone, Fastweb, Tierra Telematics, ENEL, General Motors to name the most important one.</p>
Large projects	<ul style="list-style-type: none"> • Coordinator of the H2020 PIMCity project "Building the next generation personal data platforms", funded by the European Commission in 2019, with more than 6MEuros and involving 13 partners. The project aims at developing novel solutions to untangle the current model based on users data collection and exploitation in the internet, bringing back to users the power to control their online information. • Coordinator of the SmartData@PoliTo interdepartmental center, funded by Politecnico di Torino in 2017 with more than 2.6MEuros to create a multidisciplinary center on Big Data, Machine Learning, Artificial Intelligence fundamentals and applications to multiple applications scenarios. More than 80 professors, researchers and PhD Students collaborate with the center and with PhD students working on Big Data, Data Science and Machine Learning applications. Total Funding collected up to 2020 about 7MEuros. • Coordinator of the HPC4AI (Centro di Competenza Calcolo ad Alte Prestazioni e Intelligenza Artificiale Torino), funded by Regione Piemonte with 1.5MEuros for Politecnico to build an open HPC and Big Data cluster for machine learning and artificial intelligence applications. • Principal Investigator ("responsabile scientifico") of the H2020 Fire Project "MONROE - Measuring Mobile Broadband Networks in Europe", funded by the European Commission in 2015 with about 6.5MEuros to build a large scale and flexible testbed for experimental research in 3G/4G mobile networks. • Principal Investigator ("responsabile scientifico") of the "BIG-DAMA" - BIG DATA ANALYTICS FOR NETWORK TRAFFIC MONITORING AND ANALYSIS funded by the WWTF of Vienna in 2016 with 1 MEuros for investigating novel big data approaches for traffic monitoring. • Project Coordinator of the FP7 Integrated Project (IP) "mPlane – an Intelligent Measurement Plane for Future Network and Application Management", funded by the European Commission in 2013, with more than 11MEuros to build a scalable, open, distributed infrastructure for internet monitoring. • Director of "Narus Cyber Innovation Center" (NCIC) in Italy, a laboratory hosted in Politecnico di Torino and funded in 2014 with more than 1 MUSD by Narus Inc., Sunnyvale, CA, a wholly owned subsidiary of the Boeing Company, leader in the Cybersecurity area, to develop novel solution for traffic monitoring and cybersecurity. • Technical Coordinator of the FP7 Strep "Napa-Wine - Network Aware Peer-to-peer

Main Interests and Expertise

Application over Wise Networks²⁹, funded by the European Commission in 2008 with 5.5 MEuros, to develop peer-to-peer video streaming solutions that cooperate with the network to reduce the load and improve quality.

My research interests lie in the **area of Computer and Communication Networks**. Over the years, I have covered several application domains dealing with computer and communication networks, and with **Internet traffic characterization, classification, cyber security and Internet privacy**, in particular. I'm deeply involved in **traffic measurement and characterization** activities involving networks and the Internet in particular. I'm currently working on Big Data and Machine Learning applications for traffic analysis to ultimately **shed light to the obscure dynamics of the Internet**.

Applied to **cyber security**, the diversity of the attacks, their stealthy nature mandates the design of a new generation of tools, algorithms, and methodologies for the automatic identification of malware, and threats in general. I strongly believe that automatic approaches must be designed to i) identify privacy threats, and ii) design protection mechanisms that are able to automatically adapt to ever changing situations and attacks. Clearly, the amount of data to be processed calls data mining and machine learning techniques to automatically produce knowledge. I'm proud to be the coordinator of the **SmartData@PoliTo inter-department center**, where colleagues, students and researchers from different areas collaborate to setup a novel big data and data science center in Politecnico. The center extends the big data and machine learning based approaches to other domains, among which Intelligent Transport Systems in Smart Cities, Predictive Maintenance for automotive and energy applications, and Quality of Service in next generation networks.

More recently, I started working on **online privacy**. When connected to the internet, we are constantly monitored by third party companies collecting and monetizing our personal data for their business.

The picture is today totally unbalanced, with users and companies that have no mechanism to control which information to share, and with whom. After having precisely measured the extensiveness of the problem, I am now working on developing technologies to offer internet users and companies solutions to get back the control on the information they share, **bringing transparency** on the online data collection market. Solutions leverage again big data and machine learning to automatically identify violations, and raise warning to users that can then take informed decisions. The H2020 PIMCity projects I'm coordinating aims at offering a development kit to let anyone experimenting with new solutions in this area.

List of publications

All publications are available at my personal page at <https://www.telematica.polito.it/member/marco-mellia/>

