



Federico Tonini

Curriculum Vitae

About me

Born on November 5, 1990 in Medicina (Italy), where one of the largest radio telescopes in the world is located, I've always been fascinated by telecommunications. I'm interested in new technologies related to the IT world. I enjoy working in a dynamic environment with people from different cultures and backgrounds. In my free time, I like cooking, hiking, and playing football with friends.

Education

- Apr. 2019 **Ph.D. in Electronics, Telecommunications, and Information Technologies Engineering**, *University of Bologna, Italy*.
Research topic: "*Cost-effective provisioning of 5G transport networks: architectures and modelling*".
The studies conducted throughout the PhD consist in finding cost-efficient deployment solutions, based on integer linear programs and heuristics, for the fifth generation of mobile networks (5G). Different technological solutions, namely Ethernet, wavelength division multiplexing, and free space optic technologies, were considered. Reliability aspects against network failures were also investigated.
- Oct. 2015 **MSc in Telecommunications Engineering**, *University of Bologna, Italy*, 110/110 *with honors*.
Thesis title: "*Cost Minimization Strategies for Centralized Radio Access Networks*".
- Dec. 2012 **BSc in Electronics and Telecommunications Engineering**, *University of Bologna, Italy*, 99/110.
Thesis title: "*Comunicazioni multi-salto tra veicoli mediante dispositivi IEEE 802.11p*".
- Jul. 2009 **High school technical diploma**, *Istituto Tecnico Industriale Statale Bassi-Burgatti, Cento (FE)*.
Specialization in Electronics and Telecommunications.

Experience

- Apr. 2023 – present **Researcher**, *Consorzio Nazionale Interuniversitario per le Telecomunicazioni (CNIT)*, Laboratorio di Comunicazioni Wireless (WILAB), Italy.
The primary focus of my research is to develop reliable and energy-efficient strategies for the Internet of Things within 5G/6G networks. Since 2021, I have been a Guest Lecturer on 5G network slicing for the course 'SSY145 Wireless Networks' taught by Professor Tommy Svensson at Chalmers University.

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- Nov. 2019 – **PostDoc**, *Chalmers University of Technology*, Optical Networks Unit, Sweden.
 Mar. 2023 My research activities focused on intelligent resource allocation strategies and orchestration for 5G and beyond. Moreover, I was investigating efficient resource assignment in microservice architectures for edge cloud computing within the framework of the EU project AI-NET-ANIARA. I have also co-supervised a PhD student collaborating with SIAE Microelettronica on wireless backhaul solutions for 5G.
- Apr. 2019 – **PostDoc**, *University of Bologna*, Dept. of Electrical, Electronic, and Information Engineering, Italy.
 Oct. 2019 The main research topics were slice resource provisioning techniques for reliable communications and the creation of end-to-end network slices for 5G networks. These activities were conducted in the framework of the national project "Sperimentazione 5G" funded by MISE in collaboration with Wind3. During this time, I have also co-supervised one MSc and three BSc students in the preparation of their thesis.
- Nov. 2016 – **Teaching Assistant**, *University of Bologna*, Dept. of Electrical, Electronic, and Information Engineering, Italy.
 Oct. 2019 Tutor of the course "Network Design M".
- Apr. 2017 – **Visiting Researcher**, *Optical Network Laboratory*, KTH Royal Institute of Technology, Sweden.
 Jun. 2017 Main activities: study of novel techniques to transport data over optical networks in relation to the new baseband function splits proposed by 3GPP and CPRI alliance.
- Apr. 2016 – **Visiting Researcher**, *Optical Network Laboratory*, KTH Royal Institute of Technology, Sweden.
 Jul. 2016 Main activities: development of mathematical models and implementation of a Java-based tool for 4G/5G mobile networks in dense urban scenarios.

Specific skills

- Programming IBM CPLEX/OPL, Java, C/C++, Python.
 Topics 5G/6G, resource provisioning, integer programming, edge computing, internet of things.

Languages

- Italian Native proficiency
 English Full professional proficiency