

# Carla Amatetti

## PERSONAL DETAILS

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Sector                      Telecommunication engineering

## EDUCATION

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**PhD in "Electronics, Telecommunications, and Information Technologies engineering"**

2019-2023

*Università di Bologna*

**Communications and Computer Networks Engineering**

2016-2018

*Politecnico di Torino*

Dissertation title: Study of anti-congestion algorithms for autonomous and connected vehicles 107/110.

**Biomedical engineering**

2013-2016

*Università Politecnica delle Marche*

97/110.

## WORK EXPERIENCE

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**PhD activities**

November 2019 - January 2023

*Department of Electrical, Electronic and Information Engineering (DEI), UNIBO*

Supervisor: Prof. Alessandro Vanelli-Coralli

Activities: the research mainly focuses on the study and the assessment of the integration between NB-IoT and Non-Terrestrial systems, with emphasis on the adaptation of the random access procedure to the satellite channel. Until now the activities include: detection of the preamble; estimation of the synchronization parameters; evaluation of the impact of the satellite channel characteristics on the major physical and medium access control layers; evaluation of the access time for single user and multiple users. From January to July 2022 the research activity was carried out in the University of Luxembourg, in the department of Interdisciplinary Centre for Security, Reliability and Trust (SnT), under the supervision of Prof. Symeon Chatzinotas.

Publications:

- M.Conti; A.Guidotti; C.Amatetti; A.Vanelli-Coralli, NB-IoT over Non-Terrestrial Networks: Link Budget Analysis, 2020 IEEE Global Communications Conference.
- C.Amatetti; M.Conti; A. Guidotti; A.Vanelli-Coralli; M.Kishk; M.S. Alouini, NB-IoT over Aerial and Space Networks: Technology Overview, Challenges, and Potential Solutions, Tutorial 2021 IEEE Global Communications Conference.

- C.Amatetti; M.Conti; A.Guidotti; A. Vanelli-Coralli, Preamble detection in NB-IoT via Satellite: a Wavelet based approach. 2021 IEEE Global Communications Conference
- C.Amatetti; M.Conti; A.Guidotti; A. Vanelli-Coralli, NB-IoT random access procedure via NTN: system level performances. 2022 IEEE International Conference on Communications
- A.Guidotti;C.Amatetti;Fabrice Arnal;Baptiste Chamillard; A. Vanelli-Coralli, Location-assisted precoding in 5G LEO systems: architectures and performances. 2022 EuCNC/6G summit
- Carla Amatetti; Tommaso Polonelli; Enea Masina; Charles Moatti; Denis Mikhaylov; Davide Amato; Alessandro Vanelli-Coralli; Michele Magno; Luca Benini, Towards the Future Generation of Railway Localization and Signaling Exploiting sub-meter RTK GNSS. 2022 IEEE Sensors Applications Symposium (SAS)

#### Projects:

- 2020 ESA project "System simulator of 5G 3GPP NBIOT protocol over satellite networks".
- 2020-present: EC H2020 SPACE-29-TEC-2020 DYNASAT (Dynamic spectrum sharing and bandwidth-efficient techniques for high-throughput MIMO Satellite systems). Member of the coordinating team.
- 2021 - present: PON Unibo Sadel - Attività di Ricerca dell'Università di Bologna per il progetto di un innovativo sistema di Segnalamento Ferroviario conforme ai requisiti europei ERTMS ETCS L3 e alle sue evoluzioni per Linee Regionali Secondarie.
- 2021: ETRI project 'Study on network architecture and prospective key technologies for 6G satellite communications'.
- 2021 - present: ARTES 4.0 Space for 5G 5G Statement of Work 5G Hub over the air-technology validations. ESA AO/1-10505/20/NL/NR
- 2022: ETRI project 'Study on 6G enabling key technologies based on 3GPP NTN standard'.
- 2022 ESA SatNEx W.I. 2.8 "Optimization of NB-IoT MAC procedures for NTN".

#### **Research fellow**

**July 2019 - November 2019**

*Department of Electrical, Electronic and Information Engineering (DEI), UNIBO*

Supervisor: Prof. Alessandro Vanelli-Coralli

Activities: study of the integration between 5G and Non Terrestrial Networks (NTN) from the physical layer perspective. Study and application of machine learning algorithms to improve the performance of the receiver block in communication systems, when high power amplifier is employed at the transmitter side.

#### **Electric and Electronic Product Development**

*Centro Ricerche Fiat, Orbassano*

**22 May 2019 - 30 June**

Activities: study and definition of functional architecture for the digital key and the communication technologies enabling it, such as BLE, NFC and UWB.

### **Electric and Electronic Product Development Intern** **January 2019-May 2019**

*Centro Ricerche Fiat, Orbassano*

Activities: Collection of requirements and definition of functional architecture for integrated solutions with urban mobility services and use cases description, such as vehicle's safety applications based on 5G.

## **CERTIFICATIONS**

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English

**IELTS 6.0**

## **SKILLS**

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<i>Languages</i>	<i>Italian (mother tongue)</i> <i>English</i>
<i>Programming Languages</i>	C, C++, PYTHON
<i>Software</i>	MATLAB, CST MICROWAVES, COMSOL, SUMO, OMNET++ SIMULTE, VEINS
<i>Operating systems</i>	LINUX, WINDOWS, MAC OS

## **CONFERENCE**

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2021: Invited speaker at "Ingegneria Biomedica: uno sguardo verso il futuro" seminary at University of Chieti-Pescara.