

DR. ANTONIO DI MAIO

Postdoctoral Researcher in Data-Driven Mobile Networked Systems

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EXPERIENCE

Lecturer: Seminar in Quantum Mobile Networks

University of Bern

📅 Feb 2023 - Jul 2023 📍 Bern, Switzerland

- I secured funding for setting up an international, inter-university, fully-online, seminar series at the interface between Quantum Communications and Mobile Networking, with more than 20 student participants.
- From scratch, I created an international consortium of 13 professors from 8 universities to be the seminar's advising committee, sparking collaborations among participants. (📺 VIDEO)

Postdoctoral Research Associate

University of Bern, Communications and Distributed Systems group

📅 Sep 2020 - present 📍 Bern, Switzerland

- Current Research:
 - **Distributed Learning** over **Resource-Constrained** and **Mobile Networked Systems**: Federated, Split, Gossip, Personalized, and Secure Learning
 - AI-based **Admission** and **Placement** for Network Slices and Functions
 - Secure Cooperative Inference for **Position** and **Trajectory Prediction**
 - **Analytical** and **Data-driven** Wireless Network Performance **Modeling** and **Optimization**: Physical, MAC, and Network Layers
 - Cooperative **Radio-Map** Reconstruction from PHY-layer Sampling
 - Entanglement Distribution Optimization in **Mobile Quantum Networks**
- **TA** for Bachelor courses: Operating Systems, Network Security, Computer Networks, and Seminars in Advanced Topics in Computer Networks (~70 students/semester)
- Wrote **international** project proposals
 - EU CHIST-ERA Call for Open & Re-usable Research Data & Software (2022) – "AI-based Privacy-preserving Regulation-compliant Dataset Publishing" (1.55M EUR)
- Wrote **national** project proposals
 - InnoSuisse (2023) and InnoCheque (2022) – "Modular Sensor-Fusion Indoor Positioning Framework for Personnel Performance Scoring"
 - SNF Sinergia (2021) – "Sustainable Local Touristic Development through Wireless and Social Networks Data Analysis" (894k CHF)
- Wrote **internal** project proposals
 - DigiK call (2022) – "Enhancing Users' Psychological Wellbeing through Reinforcement Learning" and "Distributed Machine Learning to Support User-Defined Privacy" (500k CHF)
 - StratA call (2021) – "Humans in Digital Transformation" (400k CHF)

Lecturer of Decision Making

Middlesex University

📅 Feb 2018 - Aug 2018 📍 London, UK

- Managed, designed, taught, and graded the course. Content: Behavioral and mathematical models that shape decision processes.

HIGHLIGHTS



Awards

- **Recognition of Outstanding Teaching Achievements** for the Seminar "Quantum Mobile Networks", ranked in the top 11 courses at the University of Bern in the Spring Semester 2023.
- Best paper award runner-up at **WoWMoM 2023**.



Editor, Reviewer, and TPC member

230+ **verified** reviews for Conference and Journal articles (IEEE TVT, TSNM, TSNE, Elsevier). Editing 3 Journals. 20+ TPC memberships. 4+ Technical Sessions chaired



Student Supervision

Scientific advisor for 7 PhD students in my current team. Supervised 5 Bachelor Theses, among which:

- "A Reinforcement-Learning-Based FANET Placement Strategy against Dynamic Jamming Attacks" (2024).
- "Throughput-and Cost-aware Node Relocation for MANET Resiliency Under Jamming Attacks" (2023).
- "On the Application of OpenFlow-based SDN in Wireless Vehicular Ad Hoc Networks" (2018)



Science Communication

Published 7 journal and 23 conference articles. Presented my research at 6 conferences. Given 8 Wireless Networking guest lectures (Luxembourg, Bern) and 1 keynote speech (UFPA, Brazil).



Inter-University Doctoral Schools

I organized the

- BENEFRI Summer School
 - 2021, Leissigen, Switzerland
 - 2024, Brienz, Switzerland
- CUSO Winter School
 - 2024, Champéry, CH (📺 VIDEO)

EDUCATION

Postdoctoral Research Associate

University of Luxembourg

📅 Jul 2020 – Sep 2020

📍 Belval, Luxembourg

Ph.D. in Telecommunications and Computer Engineering at SnT - Interdisciplinary Centre for Security, Reliability, and Trust

📅 Apr 2016 – Jun 2020

📍 University of Luxembourg

- Objective: Applying Software-Defined Networking to improve the Quality of Service of inter-vehicular communications
- Studied the allocation of a throughput- and delay-optimal pareto front of possible multi-flows in a multi-hop mobile network via a non-linear optimization problem
- Created a graph-based, congestion-avoiding routing algorithm for V2V communications in Software-Defined Vehicular Networks (SDVNs), which balances path length and congestion for multiple competing data flows
- Created a graph-based content dissemination mechanism for co-operative SDVNs, improving user fairness and data throughput while reducing frame collisions over multiple wireless channels

Visiting Student (Erasmus+)

DFKI - German Research Centre for Artificial Intelligence

📅 Apr 2015 – Sep 2015

📍 Saarbrücken, Germany

- Worked on my Master Thesis during my semester abroad at the Ubiquitous Media Technology Lab headed by Prof. A. Krüger

Master of Engineering in Computer Science

Final Grade: 110/110, Summa cum laude (GPA: 29.5/30)

📅 Nov 2013 – Feb 2016

📍 Polytechnic of Bari, Italy

- Thesis in Human-Machine Interaction: "Design of an application for tracking a human target with a drone". First work in literature that studies target tracking without color information and in absence of visible light (📺 VIDEO)
- **Valedictorian Scholarship:** Prize granted to the student with the highest GPA in the whole 2016 Master of Engineering cohort
- Google DevFest 2014 Hackathon Winner: "HealthWear - Detecting falls and abnormal health parameters through a smartwatch"

B.Eng. in Automation and Computer Science

Final Grade: 110/110, Summa cum laude (GPA: 28.7/30)

📅 Sep 2009 – Jul 2013

📍 Polytechnic of Bari, Italy

- Thesis in Image Processing and Artificial Vision: "Design and implementation of an eye blink detection Android application". Used SVM/LBP Classifiers, Integral Projection Functions, and Hu Moments to detect eye blinks (📺 VIDEO)

Diploma of Computer Engineering Technician

Final Grade: 100/100 Honors (Top 0.02% high school student)

📅 Sep 2005 – Jul 2009

📍 Tech. Industrial Inst. of Andria, Italy

RESEARCH AREAS

Mobile/Mesh/Ad Hoc Networks

MAC Design, Modeling, and Optimization

Throughput/Delay Modeling

Federated, Split, Gossip, Personalized Learning

Cooperative Localization

Large-Scale Monte-Carlo Simulations

PROJECTS

6G-CLOUD: Service-Oriented 6G Network Architecture for Distributed, Intelligent, and Sustainable Cloud-Native Communication Systems

EU HORIZON-JU-SNS

📅 Mar 2023

📍 Bern, Switzerland

- 13 academic and industrial partners
- **Goal:** Focus on developing a native-AI 6G architecture for cloud-continuum and management operation framework

Humans in Digital Transformation

Uni Bern Strategic Funds

📅 Apr 2023

📍 Bern, Switzerland

- University of Bern
- **Goal:** Enhancing Users' Psychological Wellbeing through Reinforcement Learning and Protecting User Privacy through Distributed Machine Learning

Emotion Detection by Smartphone Usage Data Processing

Swiss National Science Foundation (SNF)

📅 Apr 2021

📍 Uni Bern, Switzerland

- **Goal:** Evaluating the user's quality of life by processing sensor data acquired by their smartphone and the user's interaction with their smartphone.

CONTACT - Context and content aware communications for QoS support in VANETs

Fonds National de Recherche (FNR) & Swiss National Science Foundation (SNF)

📅 2016 - 2019

📍 Luxembourg

- Uni Luxembourg, Uni Bern, HES-SO Valais
- Funded my Ph.D. studies
- **Goal:** Integrating Software-Defined Networking, Named Data Networking and Floating Content paradigms to enhance Quality of Service in vehicular networks