

Modena, Italy 📍
non-det-alle 🌐

Alessandro Aimi

Born in 1995, Parma, Italy

Postdoctoral researcher in Computer Science and Engineering

Network simulation, mathematical modeling and optimization

Long-range low-power wireless IoT networks

Work Experience

Research Fellow,

Mobile Middleware Research Group, DISI,
Alma Mater Studiorum - Università di Bologna, Italy.

Oct. 2023 - Current

Researcher,

5G Core Network Management & Automation Team, Orange Labs,
Orange SA, Paris, France.

2020 - 2023

Education

PhD in Computer Science,

Conservatoire national des arts et métiers, Paris, France.

Thesis title: Algorithms for Reliability Insurance and Traffic Differentiation in Low Power Internet of Things Communication Networks.

Supervisor: Prof. Stefano Secci.

2020 - 2023

MSc in Computer Science and Engineering,

Politecnico di Milano, Italy.

Study track: Theoretical Computer Science and Artificial Intelligence.

Thesis title: Efficient Algorithms for Computing Semivalued Single Point Solution Concepts of TU Cooperative Games.

Supervisor: Prof. Roberto Lucchetti.

2017 - 2020

Research Activities

- Integration of B5G paradigms in long-range low-power wireless IoT networks, such as closed-loop QoS management, slicing and service differentiation for the urban IoT;
- Design of original algorithms and investigation of optimal parameter settings for the management of dense, multi-service LoRaWAN networks;
- Development of *ELoRa*, an ns-3-based research tool for end-to-end RAN emulation and real-time interaction with distributed core network infrastructures;
- Novel decentralized and participated architectures for sensor networks supporting smart-city services;
- Maintainer of the `lorawan` and `elora ns-3` modules.

Projects

House of Emerging Technologies, City of Bologna,

Italian innovation project aimed at supporting local startups and enterprises in exploiting new technologies enabled by 5G networks, such as Blockchain, IoT, and AI.

Leadership of WP3 (Internal experimentation and development of PoCs with innovative technologies on the territory).

2023 - 2025

	ANR INTELLIGENTSIA, 2020 - 2024 <i>French research project on INTElligent Edge using Learning Loops & Information GEneration for NeTwork State Inference-based Automation.</i> Full-time involvement up to Oct. 2023, only partial since then. Contribution to WP1 (Functional architecture framework definition), WP2 (Orchestration state machine modeling & learning algorithms), WP3 (Virtualization and automation of IoT access networks), and WP4 (Proof of Concept and Experimentation).
	H2020 EU Flagship Hexa-X, 2020 - 2021 <i>European research project on B5G/6G vision and intelligent fabric of technology enablers connecting the human, physical, and digital worlds.</i> Participation to WP5 (Architectural enablers for B5G/6G), and WP6 (Intelligent orchestration and service management for future B5G/6G networks).
Publications	CLUES: Community-driven LoRa networks Urban sensing Empowered by Smart homes, Aimi, Sabbioni, Bujari, Bellavista & Manzoni, IEEE Network. 2025 ELoRa: End-to-end Emulation of Massive IoT LoRaWAN Infrastructures, Aimi, Guillemin, Rovedakis & Secci, IEEE/IFIP Network Operations and Management Symposium (NOMS). 2023 Traffic Control and Channel Assignment for Quality Differentiation in Dense Urban LoRaWANs, Aimi, Guillemin, Rovedakis & Secci, International Symposium on Modeling and Optimization in Mobile, Ad hoc, and Wireless Networks (WiOpt). 2022 Packet Delivery Ratio Guarantees for Differentiated LoRaWAN Services, Aimi, Guillemin, Rovedakis & Secci, IEEE Global Communications Conference (GLOBECOM). 2022
Affiliations	Institute of Electrical and Electronics Engineers (IEEE) 2020 - Current <i>Member</i>
Skills and Interests	
Tools	Daily usage: C/C++, Rust, GNU/Linux, git, Docker, Python, LaTeX Moderate proficiency: Assembly (MIPS, x86), Java, SQL, DevOps, Cloud Eng. Base knowledge: Machine Learning, Embedded Systems, Full-stack web dev.
Languages	Italian: Mother tongue English: Fluent speaker French: Professional knowledge
Interests	FOSS, Math, Prog rock, Jazz, Lindy Hop, Art, Outdoor life, Traveling