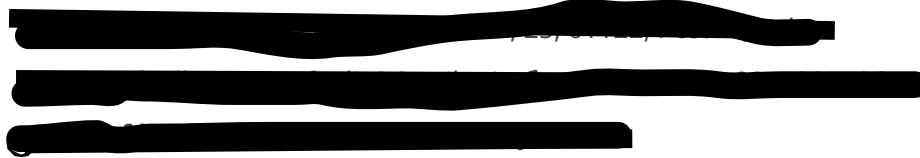




Alberto Marfaglia



WORK EXPERIENCE

Frontiers in Digital Health

[06/2024 – Current] **Topic coordinator**

Special Issue: Implementing Digital Twins in Healthcare: Pathways to Person-Centric Solutions.

"Frontiers in Digital Health" scope: Implementation of Digital Twins.

University of Bologna

City: Bologna | **Country:** Italy

[2023 – Current] **Seminar Instructor**

M.S. Course: "Semantic Web"

Department of Computer Science and Engineering (DISI)

Seminars Delivered:

- *Standards and Ontologies for Hospital Interoperability* – 23 Mar 2023, 27 May 2024, 26 Mar 2025
- *A Deep Dive into RDF, OWL & Genealogical Knowledge Base* – 17 Apr 2024, 9 May 2025
- *Rules in the Semantic Web: An Introduction to SWRL* – 9 May 2024, 22 May 2025

Regione Valle d'Aosta

Country: Italy

[08/09/2025 – 08/09/2025] **Seminar Instructor**

Delivered advanced training for the Valle d'Aosta Region on *Architecture and Standards*, presenting the new components of the FSE 2.0, along with healthcare standards and ontologies.

University of Bologna

City: Bologna | **Country:** Italy

[19/02/2024 – 30/09/2024] **University teaching assistant**

Fundamentals of Computer Science A [cod. 15305] - Modulo 1

Course of study: Biomedical Engineering/Electronic Engineering, DEI.

Alma Mater Studiorum - Università di Bologna

City: Bologna | **Country:** Italy

[01/05/2023 – 31/10/2023] **Research fellow**

Development of the Health Italia reference architecture for the integration and processing of health data enabling precision medicine approaches.

MebLabs

City: Fano | **Country:** Italy

[02/2023 – 04/2023] **Software developer**

Objective: Research and prototyping of solutions for indexing and managing data in vector databases.

Skills gained: Technology evaluation, system prototyping, cloud deployment (AWS), database optimization, research and testing methodology.

Alma Mater Studiorum - Università di Bologna

City: Cesena | **Country:** Italy

[20/09/2021 – 30/09/2022] **University teaching assistant**

Embedded Systems and Internet-of-Things [code 77780].

Course of Study: Computer Engineering and Science, SSD: ING-INF/05.

Alma Mater Studiorum - Università di Bologna

City: Cesena | **Country:** Italy

[21/02/2022 – 03/06/2022] **University teaching assistant**

Fundamentals of Computer Science [code 09730] - Module 1.

Course of study: Electronic Engineering, SSD: ING-INF/05.

FOMRart

City: Cesena | **Country:** Italy

[10/05/2022] **Seminar instructor**

Seminar of the IFTS course related to the topics of IoT and Industry 4.0.

Alma Mater Studiorum - Università di Bologna

City: Cesena | **Country:** Italy

[02/12/2020 – 02/03/2021] **Research fellow**

Alma Mater Studiorum - University of Bologna. Research activity: "Microservices models and architectures for the development of Healthcare applications based on HL7, FHIR, and REST standards."

Alma Mater Studiorum - Università di Bologna

City: Cesena | **Country:** Italy

[27/03/2020 – 04/05/2020] **Internship**

Department of Computer Science - Science and Engineering UNIBO. Main activities carried out: development of software systems to support the work of emergency doctors.

Gruppo Loccioni

City: Angeli di Rosora | **Country:** Italy

[10/01/2016 – 28/01/2016] **Internship**

Development of software prototypes and study of new technologies.

CONFERENCES AND SEMINARS

- [17/03/2025 – 21/03/2025] **IEEE International Conference on Pervasive Computing and Communications (PerCom 2025)**
Washington D.C.
Workshop: DIGITA-25 Digital Twins Ecosystems and Applications In conjunction with the 23rd IEEE International Conference on Pervasive Computing and Communications.
Paper Title: "CONNECTED: A Knowledge Graph-Driven Platform for Clinical Data Harmonization and Personalized Digital Twin-Based Healthcare"
Link: <https://percom.org/2025/>
- [11/03/2024 – 15/03/2024] **IEEE International Conference on Pervasive Computing and Communications (PerCom 2024)**
Biarritz
Workshop: MADTECC 24 Medical Applications with Digital Twins and Edge-cloud Continuum In conjunction with the 22rd IEEE International Conference on Pervasive Computing and Communications.
Paper Title: "Representation of Machine Learning Models to Enhance Simulation Capabilities Within Digital Twins in Personalized Healthcare"
Link: <https://percom.org/2024/>

EDUCATION AND TRAINING

- [01/11/2023 – Current] **PhD in Computer Science and Engineering**
Università di Bologna
City: Bologna | **Country:** Italy |
Title research theme: "Data-centric approaches in trustworthy AI systems"
 - Active student member of HL7 Italy, with a focus on interoperability and healthcare standards
- [29/07/2024 – 31/07/2024] **Summer School DARE 2024 - Co-design of Digital Preventive Technologies**
Fondazione DARE <https://www.fondazione-dare.it/it/summer-school-dare-2024-co-design-of-digital-preventive-technologies/>
City: Bologna | **Country:** Italy |
- [07/05/2024 – 06/06/2024] **HL7 FHIR Fundamentals Course**
HL7 Italia <https://www.hl7.it/>
Country: Italy |
- [17/03/2023] **Master's degree - Computer Engineering and Science**
Università di Bologna - campus di Cesena
City: Cesena | **Country:** Italy | | **Final grade:** 110 cum laude | **Thesis:** Design and development of a prototype digital model to support healthcare interoperability
Final Grade Average: 29,8/3
- [15/07/2020] **Bachelor's Degree in Computer Engineering and Science**
Università di Bologna - campus di Cesena
City: Cesena | **Country:** Italy | | **Final grade:** 110 cum laude | **Thesis:** Design and development of a software system for prehospital trauma tracking

Final Grade Average: 28,52/3

[06/07/2017] **Diploma in Computer Science and Telecommunications**

Istituto Tecnico Industriale Statale Enrico Mattei

City: Urbino | **Country:** Italy |

[04/06/2016 – 30/06/2016] **Academic Certificate**

Meridian - School of English

City: Portsmouth | **Country:** United Kingdom |

PUBLICATIONS

- [2025] **Towards real-world clinical data standardization: A modular FHIR-driven transformation pipeline to enhance semantic interoperability in healthcare**
Authors: Marfoggia, A., Nardini, F., Arcobelli, V.A., Moscato, S., Mellone, S., Carbonaro, A. | **Journal Name:** Computers in Biology and Medicine | **Volume, Issue and Pages:** 187, pp. 1 - 11 | **Publisher:** Elsevier BV
- [2025] **CONNECTED: A Knowledge Graph-Driven Platform for Clinical Data Harmonization and Personalized Digital Twin-Based Healthcare**
Authors: Marfoggia, A., D'Errico, C., Nardini, F., Mellone, S., Carbonaro, A. | **Journal Name:** IEEE International Conference on Pervasive Computing and Communications (PerCom) | **Publisher:** IEEE
- [2024] **FHIR-standardized data collection on the clinical rehabilitation pathway of trans-femoral amputation patients**
Authors: Arcobelli, V.A., Moscato, S., Palumbo, P., Marfoggia, A., Nardini, F., Randi, P., et al. | **Journal Name:** Scientific Data | **Volume, Issue and Pages:** 806, pp. 1 - 14 | **Publisher:** Nature Research
- [2024] **Representation of Machine Learning Models to Enhance Simulation Capabilities Within Digital Twins in Personalized Healthcare**
Authors: Marfoggia, A., Nardini, F., Mellone, S., Carbonaro, A. | **Journal Name:** IEEE International Conference on Pervasive Computing and Communications, PerCom Workshops 2024 | **Publisher:** IEEE
- [2023] **CONNECTED: Leveraging Digital Twins and Personal Knowledge Graphs in Healthcare Digitalization**
Authors: Carbonaro, A., Marfoggia, A., Nardini, F., Mellone, S. | **Journal Name:** Frontiers in Digital Health | **Volume, Issue and Pages:** 1322428, pp. 1 - 6 | **Publisher:** Frontiers Media SA
- [2023] **MOTU on FHIR: A preliminary strategy to enable interoperability for retrospective dataset standardization**
Authors: Arcobelli, V.A., Moscato, S., Marfoggia, A., Nardini, F., Randi, P., Davalli, A., et al. | **Journal Name:** IEEE EMBS Special Topic Conference on Data Science and Engineering in Healthcare | **Publisher:** IEEE

AWARDS

[21/03/2025] **Best Workshop Paper (DIGITA 2025)**

CONNECTED: A Knowledge Graph-Driven Platform for Clinical Data Harmonization and Personalized Digital Twin-Based Healthcare

[16/01/2020] **Telecommunication Networks**

Network architectures and protocols (TCP/IP, Ethernet, WiFi), routing (RIP, OSPF), IP addressing and management (DHCP, NAT, ICMP, ARP), software-defined networking (SDN, OpenFlow), network function virtualization (NFV).

Skills gained: LAN and IP configuration, network emulation, packet analysis with Wireshark, fundamentals of SDN and NFV.

Grade: 27/30

Course: First cycle degree programme (L) in Computer Science and Engineering (cod. 8615)

Link: <https://www.unibo.it/it/studiare/insegnamenti-competenze-trasversali-moocs/insegnamenti/insegnamento/2018/378216>

[18/01/2019] **Operating Systems**

Design and functioning of Linux and Windows systems, process and memory management, I/O handling, protection and security, introduction to virtualization.

Skills gained: shell scripting, system resource management, concurrency, Linux kernel basics, virtualization concepts.

Grade: 30/30

Course: First cycle degree programme (L) in Computer Science and Engineering (cod. 8615)

Link: <https://www.unibo.it/it/studiare/insegnamenti-competenze-trasversali-moocs/insegnamenti/insegnamento/2018/378218>

[18/06/2020] **Systems Integration**

Virtualization and containers, on-premise cloud platforms, identity management (LDAP, Kerberos, Active Directory), network and server farm security (firewalls, TLS/SSL, iptables), microservices architectures, centralized monitoring and configuration (SNMP, Nagios).

Skills gained: deployment and monitoring of distributed multi-user systems, Linux/Windows integration, centralized services management, secure system design.

Grade: 30L/30

Course: First cycle degree programme (L) in Computer Science and Engineering (cod. 8615)

Link: <https://www.unibo.it/it/studiare/insegnamenti-competenze-trasversali-moocs/insegnamenti/insegnamento/2018/430331>

[29/06/2021] **Network Security**

Principles of cybersecurity, cryptography, authentication, firewall design, intrusion detection, risk management, DoS/DDoS attacks, digital forensics.

Skills gained: secure system design, vulnerability assessment, firewall implementation, mitigation of cyber threats.

Grade: 30L/30

Course: Second cycle degree programme (LM) in Computer Science and Engineering (cod. 8614)

Link: <https://www.unibo.it/it/studiare/insegnamenti-competenze-trasversali-moocs/insegnamenti/insegnamento/2020/377369>

LANGUAGE SKILLS

Mother tongue(s): Italian

Other language(s):

English

LISTENING B2 READING B2 WRITING B2

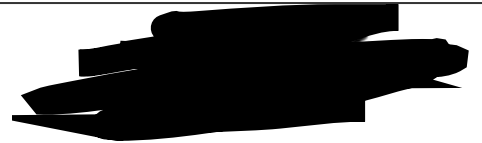
SPOKEN PRODUCTION B2 SPOKEN INTERACTION B2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

SKILLS

Business Intelligence | Machine Learning | Semantic Web | Functional Programming | Reactive Programming | Web Programming | Mobile Programming | DBMS: MySQL, PostgreSQL, SQL Server | Network protocols | Embedded Systems | Parallel computing in HPC environment | Software Architectures | Digital Twin Technologies | Knowledge Graphs | Symbolic AI | Language Model | Standard HL7 FHIR | Git/Github, Docker, Gitlab | Network administration / Network security / Network maintenance | Users and Permissions | Virtualization via Docker, CI and Containerization with GitLab CI, CD to the AWS | web based collaborative platforms | Linux Server Configuration and maintenance

Bologna, 25/09/2025



Alberto Marfoggia