

## Curriculum Vitae

# Andrea Sabbioni

Date of Birth: 18 March 1993

Address: Via Pier De Crescenzi 27, Bologna

Email: andrea.sabbioni5@unibo.it

## I. SHORT PRESENTATION

Andrea Sabbioni (IEEE, ACM) is an Assistant Professor (RTD-A) at the University of Bologna, Department of Computer Science and Engineering (DISI), where he conducts research within the PNRR Extended Partnerships Programme, Project SERICS.

He pursued a Ph.D. degree in computer science and engineering at the University of Bologna. His thesis was titled "Serverless Middlewares for Integrating Heterogeneous and Distributed Services in Cloud Environments." During this period he grew his interest in the research career. He received a M.Sc. degree (cum laude) in computer science engineering from the University of Bologna, Italy.

His research interests include cloud continuum, next-generation networks, serverless computing, middleware, and architectural approaches for innovative tourism, smart cities, and industrial applications.

He is involved in many collaborations with companies in the territory and public entities to support technological transfer. In particular, he is currently co-chair of the regional working group on Smart Tourism that aims to support regional tourism development by proposing technological and organizational solutions.

## II. EDUCATION

**2019–2023** *University of Bologna* PhD in Computer Science Engineering

**Thesis:** Serverless Middlewares to Integrate Heterogeneous and Distributed Services in Cloud Continuum Environments

**2016–2019** *University of Bologna* Master in Computer Science Engineering *grade 110L/110*

**Thesis:** Stream Processing di Geo informazioni su Apache Spark a supporto di DAE

**2012–2016** *University of Bologna* Bachelor in Computer Science Engineering *grade 99/110*

**Thesis:** Tecniche di supporto alla migrazione di risorse virtuali nell'infrastruttura OpenStack

### III. RESEARCH

#### A. Research Area and Expertise

Andrea Sabbioni’s research delves into cutting-edge cloud-computing models and their profound impact on Smart *Smart Cities*, *Smart Tourism*, and the emerging paradigm of *Industry 5.0*. From a technical viewpoint, his research focuses on how new cloud computing models can enable easier and more transparent exploitation of Cloud Continuum resources for customers while enabling provider infrastructure optimizations.

Specifically, his research concerns *Serverless Computing and the Function as a Service (FaaS)* paradigm. He investigates how FaaS architecture can evolve to exploit the heterogeneous and distributed resources available within the cloud continuum to meet the different reliability and Quality of Service (QoS) requirements of Smart Cities, Smart Tourism, and Industry 5.0.

In particular, the efficient and decentralized execution and *composition of functions* over heterogeneous and distributed resources is one of his prime interests as an enabler for the effective execution of cloud continuum workloads in many of the scenarios considered.

#### B. Academic Positions

**Nov 2024–Present**, *Assistant Professor (RTD-A)*, Competition Sector 01/B1 – SSD INF/01, Department of Computer Science and Engineering (DISI), University of Bologna. Research funded by the National Recovery and Resilience Plan (PNRR) – Extended Partnerships Programme, Project PE7–SERICS “SEcurity and RIghts in the CyberSpace” (CUP J33C22002810001)

**Jan 2024–Nov 2024**, *Research Fellow*, Centro Interdipartimentale di Ricerca Industriale su ICT (CIRI ICT), Regional project PR-FESR “Digital Twins A suppoRto dEl DEVOps in ambienti IndustriaLi” (**DAREDEVIL**)

#### C. Indicators on Publications and Citations

*Accessed: 28 April 2024*

**Author ORCID:** 0000-0001-9817-1702

**Google Scholar:** *h-Index:9, i10-Index:6, Citations:294*

**Scopus:** *h-Index:7, Citations:205*

#### D. Awards

**Certificate of Appreciation:** GoodIT 2025: ACM 5th International Conference on Information Technology for Social Good (GoodIT 2025), Antwerp, Belgium 3-5 September 2025, Received a Certificate of Appreciation for service as Technical Program Committee (TPC) Co-Chair and Publicity Co-Chair, contributing to the coordination, scientific evaluation process, and international promotion of the conference.

**Best Paper Award:** *IEEE ICC 2020: IEEE International Conference on Communications.* Montreal 14-23 June 2021. *Enhancing the Performance of Industry 4.0 Scenarios via Serverless Processing at the Edge.* A. Bujari, A. Corradi, L. Foschini, L. Patera, A. Sabbioni.

**Best Paper Award:** *GoodTechs '20: Proceedings of the 6th EAI International Conference on Smart Objects and Technologies for Social Good.* Virtual (Italy) 14-16 Sep 2020. **Geo-distributed Architectural Approach Favouring Smart Tourism Development in the 5G Era.** A. Bujari, C. Bergamini, A. Corradi, L. Foschini, C. E. Palazzi, A. Sabbioni.

#### E. Invited Speaker

**Keynote** ICoNIoT 2025: INCT ICoNIoT Seminar Series. Online (Brazil), 13 November 2025. Keynote Lecture: New Cloud Continuum Models to Support Society 5.0 Development.

**Lecture** SoSmartCPS 2025: 1st Edition –Designing and Assembling Smart Cyber-Physical Systems Summer School. Ortigia (Siracusa), Italy, July 2025. Keynote Lecture: The Cloud/Edge Blueprint.

**Keynote** SEATED 2024: 1st Workshop on Serverless at the Edge, co-located with ACM HPDC 2024. Pisa (Italy), 3 June 2024. Keynote Talk: Function as a Service (FaaS) at the Edge: an Architectural Perspective.

#### F. Presentations in Conferences

*IEEE ISCC 2025: IEEE Symposium on Computers and Communications. Athens (Greece) 2025.* A. Sabbioni, L. Serfilippi, S. Montebugnoli, A. Bujari, A. Corradi. **MLCOps: a Platform to Support Cloud Continuum Machine Learning Operations.**

*UCC 2025: IEEE/ACM International Conference on Utility and Cloud Computing. 2025.* N. Giulianelli, A. Sabbioni, S. Montebugnoli, A. Bujari, A. Corradi. **KOTO: A Kubernetes-Based Platform for Secure and Scalable OT Orchestration in Industry 5.0.**

*CSCN 2025: IEEE Conference on Standards for Communications and Networking. 2025.*  
A. Sabbioni, F. A. Ciraci, A. Bujari, P. Bellavista. **SLICES SCC-Blueprint: A Reference Architecture for Serverless Cloud Continuum Research.**

*SLICES Workshop, IFIP 2025.* A. Sabbioni, A. Bujari, P. Bellavista. **The SLICES Cloud Continuum Blueprint.**

*ICCCN 2025: International Conference on Computer Communications and Networks. 2025.*  
A. Sabbioni, L. Foschini. **SFIOC: a Platform to Support Service Dependency Injection in Serverless Functions.**

*GoodIT2023: Proceedings of the 2023 ACM Conference on Information Technology for Social Good (GoodIT '23). Association for Computing Machinery, Lisbon, Portugal, 06 Sept 2023.*  
Alessandro Calvio, Andrea Sabbioni, Armir Bujari, and Luca Foschini. **An Event and Service Mesh Architecture Supporting Service Integration in Society 5.0 enabled Smart Cities.**

*GoodIT2022: Proceedings of the 2022 ACM Conference on Information Technology for Social Goods Cyprus 7-9 September 2022.* . L. Mazzuca, A. Garbugli, A. Sabbioni, A. Bujari, A. Corradi. **Towards a Resource-aware Middleware Support for Distributed Game Engine Design.**

*IEEE ISCC 2021: IEEE Symposium on Computers and Communications. Athens (Greece) 5-8 Sep 2021.* A. Sabbioni, L. Rosa, A. Bujari, L. Foschini, A. Corradi. **A Shared Memory Approach for Function Chaining in Serverless Platforms.**

*IEEE GLOBECOM 2020: IEEE Global Communications Conference Taipei(Taiwan) 7-11 Dec 2020.* A. Sabbioni, A. Bujari, L. Foschini, A. Corradi. **An Efficient and Reliable Multi-Cloud Provider Monitoring Solution.**

*GoodTechs '20: Proceedings of the 6th EAI International Conference on Smart Objects and Technologies for Social Good. Virtual (Italy) 14-16 Sep 2020.* A. Bujari, C. Bergamini, A. Corradi, L. Foschini, C. E. Palazzi, A. Sabbioni. **A Geo-distributed Architectural Approach Favouring Smart Tourism Development in the 5G Era.**

#### *G. Manaegment in Conferences*

**DTSG-GOODIT 2023 Special Track on Digital Twin Networks & Services for Social Good: Opportunities, Challenges, and Applications** ACM 4th International Conference on Information Technology for Social Good (GoodIT 2024) 4-6 September 2024, Bremen, Germany **Workshop Chair**

**PACHS-GOODIT 2024** *Special Track on Platforms and Cooperation Models for a Human-centric Society 5.0* ACM 3rd International Conference on Information Technology for Social Good (GoodIT 2024) 6-8 September 2023, Lisbon, Portugal **Workshop Chair**

#### *H. Research Project and Role*

*Any project is followed by the role played*

**2024–Present** PR-FESR DARDEVIL Studio, design, e implementazione di un middleware di supporto all'industrial DevOps in ambienti di Virtual Commissioning per scenari industriali reali (Scientific Coordinator)

**2022–2023** [P014] EU H2020 RIA, ICT-56 nexT gEneRation sMart INterconnectEd IoT Coordinator Panagiotis Sarigiannidis (Thessaloniki, Greece) (Participant)

**2020–2023** Erasmus+ TEAL2.O Improving Access to Science and Technology Higher Education in Resource-Poor Institutions through an Open Platform for Technology Enabled Active Learning Environment Paolo Bellavista (University of Bologna, Italy) (Participant)

**2024–Present** PESCO (Pervasive communications) “RESearch and innovation on future Telecommunications systems and networks, to make Italy more smART (RESTART)”, funded by the European Union – NextGenerationEU within the PNRR – M4C2, Investment 1.3, Notice n. 341 of 15-03-2022. (Participant).

**2023–Present** SLICES “Scientific Large-scale Infrastructure for Computing/Communication Experimental Studies (SLICES)”, funded by the European Union’s Horizon 2020 research and innovation program. (Participant).

#### *I. List of Publications*

*Publications are classified by venue: Journal, Magazine, and Conference following IEEE reference style.*

##### *1) Journals and Magazines:*

- 1) S. Montebugnoli, A. Sabbioni, L. Foschini, and A. Corradi, “**Service Mesh: The Rise of Event-Driven Asynchronous Mesh in Cloud Continuum,**” *IT Professional*, vol. 28, no. 1, pp. 51–58, 2026.
- 2) S. Montebugnoli, L. Bonati, A. Sabbioni, L. Foschini, P. Bellavista, S. D’Oro, M. Polese, and T. Melodia, “**MANATEE: A DevOps platform for xApp lifecycle management and testing in Open RAN,**” *arXiv preprint arXiv:2601.14009*, 2026.

- 3) A. Sabbioni, A. Corradi, S. Monti, and C. R. De Rolt, “**From Digital Services to Sustainable Ones: Novel Industry 5.0 Environments Enhanced by Observability,**” *Information*, vol. 16, no. 9, p. 821, 2025.
- 4) A. Aimi, A. Sabbioni, A. Bujari, P. Bellavista, and P. Manzoni, “**CLUES: Community-driven LoRa networks Urban sensing Empowered by Smart homes,**” *IEEE Network*, 2025.
- 5) A. Corradi and A. Sabbioni, “**Serverless Computing for Society 5.0,**” *IT Professional*, vol. 26, no. 5, pp. 79–84, 2024.
- 6) A. Sabbioni, A. Garbugli, L. Foschini, A. Corradi and P. Bellavista “**Serverless Computing for QoS-Effective NFV in the Cloud Edge.** in *IEEE Communications Magazine*, vol. 62, no. 4, pp. 40-46, April 2024, doi: 10.1109/MCOM.001.2300182.
- 7) A. Sabbioni, L. Rosa, A. Bujari, L. Foschini, A. Corradi. **A DIstributed and decentralized platForm enabling Function composition in Serverless Environments.** *The International Journal of Computer and Telecommunications Networking*, Volume 210, 19 June 2022, 108993.
- 8) A. Garbugli, A. Sabbioni, A. Corradi, P. Bellavista. **TEMPOS: QoS Management Middleware for Edge Cloud Computing FaaS in the Internet of Things.** *IEEE Access*, vol. 10, pp. 49114-49127, 2022.
- 9) A. Sabbioni, T Villano, A Corradi. **An Architecture for Service Integration to Fully Support Novel Personalized Smart Tourism Offerings.** *Sensors* 2022, 22, 1619.
- 10) A. Bujari, A. Calvio, L. Foschini, A. Sabbioni, A. Corradi. **A Digital Twin Decision Support System for the Urban Facility Management Process.** *Sensors* 2021, 21, 8460.
- 11) L. Acquaviva, P. Bellavista, F. Bosi, A. Corradi, L. Foschini, S. Monti, A. Sabbioni. **NoMISHAP: A Novel Middleware Support for High Availability in Multicloud PaaS.** *IEEE Cloud Computing*, vol. 4, no. 4, pp. 60-72, July/August 2017

#### *J. Contributions in Conferences*

- 1) N. Giulianelli, A. Sabbioni, S. Montebugnoli, A. Bujari, and A. Corradi, “**Forging Industry 5.0 DevOps: Towards Secure and Scalable OT Orchestration Powered by Kubernetes,**” in *CCNC 2026*, pp. 1–2.
- 2) S. Montebugnoli, E. Drudi, A. Sabbioni, G. Di Modica, and L. Foschini, “**TORNADO: TOSCA-enabled Orchestration for RAN Network functions Automating DevOps in**

- O-Cloud**,” in *ISCC 2025*, pp. 1–6.
- 3) A. Sabbioni, L. Serfilippi, S. Montebugnoli, A. Bujari, and A. Corradi, “**MLCOps: a Platform to Support Cloud Continuum Machine Learning Operations**,” in *ISCC 2025*, pp. 1–6.
  - 4) N. Giulianelli, A. Sabbioni, S. Montebugnoli, A. Bujari, and A. Corradi, “**KOTO: A Kubernetes-Based Platform for Secure and Scalable OT Orchestration in Industry 5.0**,” in *UCC 2025*, pp. 1–6.
  - 5) A. Sabbioni, F. A. Ciraci, A. Bujari, and P. Bellavista, “**SLICES SCC-Blueprint: A Reference Architecture for Serverless Cloud Continuum Research**,” in *CSCN 2025*, pp. 1–6.
  - 6) S. Montebugnoli, A. Sabbioni, F. Callegati, L. Foschini, and P. Bellavista, “**CLOSER: a Composable Lightweight Observability for 5g RAN Environment Inside Near RT RIC**,” in *ICC 2025*, pp. 1900–1905.
  - 7) A. Sabbioni, A. Bujari, and P. Bellavista, “**The Slices Cloud Continuum Blueprint**,” in *SLICES Workshop, IFIP 2025*.
  - 8) A. Sabbioni and L. Foschini, “**SFIOC: a Platform to Support Service Dependency Injection in Serverless Functions**,” in *ICCCN 2025*, pp. 1–6.
  - 9) D. Tazzioli, A. Sabbioni, A. Bujari, and L. Foschini, “**Empowering Kubernetes with Platform Engineering to Automate IoT Processing Workflows Orchestration at the Edge**,” in *CAMAD 2024*, pp. 1–6.
  - 10) S. Montebugnoli, A. Sabbioni, and L. Foschini, “**Evaluating mesh communications in disaggregated near-RT RIC for 5G open RAN**,” in *GLOBECOM 2024*, pp. 571–576.
  - 11) M. I. Ali, G. Di Modica, G. Rondinini, A. Sabbioni, and A. Corradi, “**Function profiling to support smart serverless service deployment in the cloud continuum**,” in *ISCC 2024*, pp. 1–6.
  - 12) P. Bellavista, A. Bujari, L. Foschini, A. Sabbioni, and R. Venanzi, “**A MECApp-aware Lifecycle Management Approach in 5G Edge-Cloud Deployments**,” in *ICCCN 2024*, pp. 1–6.
  - 13) A. Costagliola, A. Sabbioni, A. Bujari, R. Montanari, and P. Bellavista, “**A multi-faceted interoperability model for reliable and trustworthy urban digital twins**,” in *GoodIT 2024*, pp. 373–376.
  - 14) Alessandro Calvio, Andrea Sabbioni, Armir Bujari, and Luca Foschini. **An Event and**

- Service Mesh Architecture Supporting Service Integration in Society 5.0 enabled Smart Cities.** *In Proceedings of the 2023 ACM Conference on Information Technology for Social Good (GoodIT '23).* Association for Computing Machinery, Lisbon, Portugal, 06 Sept 2023. <https://doi.org/10.1145/3582515.3609568>
- 15) A. Sabbioni, S. Romeo, A. Bujari, L. Foschini, A. Corradi. **An architectural approach for heterogeneous data access in serverless platforms.** *Globecom2022: Proceedings of the 2022 ACM Conference on Information Technology for Social Goods.* 4–8 December 2022.
  - 16) A. Sabbioni, C. Mazzocca, A. Bujari, R. Montanari, A. Corradi. **A Decentralized Architecture for Dynamic and Federated Access Control Facilitating Smart Tourism Services.** *GoodIT2022: Proceedings of the 2022 ACM Conference on Information Technology for Social Goods.* Cyprus 7-9 September 2022.
  - 17) L. Mazzuca, A. Garbugli, A. Sabbioni, A. Bujari, A. Corradi. **Towards a Resource-aware Middleware Support for Distributed Game Engine Design.** *GoodIT2022: Proceedings of the 2022 ACM Conference on Information Technology for Social Goods.* Cyprus 7-9 September 2022.
  - 18) C. Mazzocca, A. Sabbioni, R. Montanari, M. Colajanni. **Evaluating Tangle Distributed Ledger for Access Control Policy Distribution in Multi-region Cloud Environments.** *Vallecillo, A., Visser, J., Pérez-Castillo, R. (eds) Quality of Information and Communications Technology. QUATIC 2022. Communications in Computer and Information Science, vol 1621. Springer, Cham.*
  - 19) A. Sabbioni, C. Mazzocca, R. Montanari, M. Colajanni. **A Fully Decentralized Architecture for Access Control Verification in Serverless Environments.** *ISCC 2022: 27th IEEE Symposium on Computers and Communications* Rhodes Island, Greece 30th June - 3rd July 2022.
  - 20) A. Sabbioni, L. Rosa, A. Bujari, L. Foschini, A. Corradi. **A Shared Memory Approach for Function Chaining in Serverless Platforms.** *IEEE ISCC 2021: IEEE Symposium on Computers and Communications.* Athens (Italy) 5-8 Sep 2021.
  - 21) A. Bujari, A. Corradi, L. Foschini, L. Patera, A. Sabbioni. **Enhancing the Performance of Industry 4.0 Scenarios via Serverless Processing at the Edge.** *IEEE ICC 2020: IEEE International Conference on Communications.* Montreal 14-23 June 2021. **Best Paper Award**

- 22) A. Sabbioni, A. Bujari, L. Foschini, A. Corradi. **An Efficient and Reliable Multi-Cloud Provider Monitoring Solution.** *IEEE GLOBECOM 2020: IEEE Global Communications Conference.* Taipei(Taiwan) 7-11 Dec 2020.
- 23) A. Bujari, A. Calvio, L. Foschini, A. Sabbioni, A. Corradi **IPPODAMO: A digital twin support for smart cities facility management.** *GoodIT 2021: Proceedings of the 2021 Conference on Information Technology for Social Good.* Association for Computing Machinery, Inc
- 24) A. Bujari, C. Bergamini, A. Corradi, L. Foschini, C. E. Palazzi, A. Sabbioni. **A Geo-distributed Architectural Approach Favouring Smart Tourism Development in the 5G Era.** *GoodTechs '20: Proceedings of the 6th EAI International Conference on Smart Objects and Technologies for Social Good.* Virtual (Italy) 14-16 Sep 2020. **Best Paper Award**

#### K. Reviewing Service

**CSUR:** ACM Computing Surveys

**GoodIT:** ACM International Conference on Information Technology for Social Good

**TCC:** IEEE Transaction on Cloud Computing

**Access:** IEEE Access Journal

**NETWORK:** IEEE Network Magazine

**Globecom:** IEEE Global Communications Conference

**WCNC:** IEEE Wireless Communications and Networking Conference

**PERCOM:** Elsevier Pervasive and Mobile Computing

**WINE:** Wireless Network

**JNCA:** Journal of Network and Computer Applications

## IV. DIDACTIC ACTIVITIES

### A. Teaching

**2024–Present** University of Bologna Teaching LM 84531 - INFRASTRUCTURES FOR CLOUD COMPUTING AND BIG DATA M - 8 cfu with Prof. Antonio Corradi

**2025-Present** University of Bologna Teaching LT 28024 - RETI DI CALCOLATORI T with Prof. Antonio Corradi and Armir Bujari

### *B. Teaching Tutor*

**2024–2025** University of Bologna Teaching Assistant LM 84531 - INFRASTRUCTURES FOR CLOUD COMPUTING AND BIG DATA M - 8 cfu with Prof. Antonio Corradi

**2023–2024** University of Bologna Teaching Assistant LT 28024 - RETI DI CALCOLATORI T with Prof. Antonio Corradi

**2020–2021** University of Bologna Teaching Assistant LT 28004 - FONDAMENTI DI INFORMATICA T-1 (A-K) with Prof. Federico Chesani

**2020-2021** University of Bologna Teaching Assistant LT 28024 - RETI DI CALCOLATORI T with Prof. Antonio Corradi

### *C. External teaching Experience*

**November 2022** *ITSMAKER* Seminary on ”**Smart Manufactory and Industry 5.0**” *Philip Morris Manufacturing & Technology Bologna*

**SII4.0 SII40** Seminary on ” **Introduction to FaaS and DevOps for FaaS**” at Higher Education and Training Initiative Services and Innovation for Industry 4.0 (SII40), financed by Regione Emilia-Romagna

## V. ACADEMIC THIRD MISSION

### *A. Cooperation with Companies*

**July 2016 – present** *Project Manager of company research Lab Imola Informatica S.p.A.* During this period, he had the opportunity to participate in different projects, some of which in collaboration with the University of Bologna. The cooperation with the University of Bologna led also to the publication of an article in the journal *IEEE Cloud Computing* “NoMISHAP: A Novel Middleware Support for High Availability in Multicloud PaaS”. His main occupation is currently to manage a small laboratory as support to test new technologies involved in both projects with Universities and Imola Informatica’s customers.

**July 2016 – present** *Corporate Training Imola Informatica S.p.A.* Internal courses of training and in-depth study held on topics related to cloud computing such as serverless, Docker, Kubernetes and Cloud Native architectures

**July 2012** Business servers assembly and installation E4 Computer Engineering S.p.A.

## *B. Public Engagement*

**Jan 2023 – present** Co-Chair Working Group on Smart Tourism Clust-ER Turismo During this period, I had the opportunity to collaborate with several partners involved in tourism and technology and with Innovate and Turismo Clust-ER to structure technological solutions to support smart tourism development in the region.

## VI. INTERNATIONALIZATION

### *A. Internships*

**May 2022–Jul 2022** University Rovira I Virgili Tarragona Visiting student **Cooperation objective:** Towards a Serverless Data Analytics Platform supporting Smart Tourism service development

**Oct 2021–Jan 2022** ADLINK Technology Visiting Researcher **Cooperation objective:** Towards an optimized data-blending Serverless architecture

### *B. International Cooperation*

**July 2023, Bologna** Summer International Event Industry 5.0 in collaboration between UNIBO – Cornell and Campinas, together with Emilia Romagna ecosystem

**September 2023, New York, Participant and Speaker** at *UNIBO-UNICAMP Online Specialization Course on Industry 4.0* where he get in contact with researchers from: Cornell, New York University, Fordham University, New Jersey Institute of Technology, Columbia University, Campinas University, The City University of New York