Curriculum Vitae of Morena Barboni

Personal information

Name / Surname	**Morena Barboni**

Current Role

Jul. 2025–Present	**Post-Doc Researcher** University of Camerino, Italy

Education

16 Jul. 2025	**PhD in Computer Science and Mathematics** University of Camerino, Italy
Dissertation	*Enhancing Smart Contract Reliability: Dynamic Approaches for Quality Assurance*
Advisors	Prof. Andrea Polini, Prof. Andrea Morichetta
Feb.–Jul. 2024	**Visiting PhD Student** Universität Passau, Germany
Supervisor	Prof. Gordon Fraser
8–12 Jul. 2024	**Summer School on Software Testing, Verification & Validation (TAROT)** University of Bergamo, Italy
27 Sept.–18 Oct. 2022	**International School on Algorand Smart Contracts** University of Cagliari, Online
27 Jun.–1 Jul. 2022	**3rd Blockchain and Distributed Ledger Technology School** University of Cagliari, Italy
25 Oct. 2020	**Master's Degree in Computer Science** University of Camerino, Italy
Curriculum	Software and Systems for Industries
Thesis	"SuMo: A mutation testing tool for Etherum Smart Contracts"
Advisors	Prof. Andrea Polini, Prof. Andrea Morichetta
Grade	110L
16 Jul. 2018	**Bachelor's Degree in Computer Science** University of Camerino, Italy
Thesis	"A scheduling service for a lithographic company"
Advisor	Prof. Andrea Polini
Grade	110L

Research Experience

Research Interests	Test Automation · Mutation Testing · Software Reliability · Blockchain Systems

Research Activities

2023–2025	**Research Collaborator**, Quantstamp
Industry Supervisors	Dr. Sebastian Banescu, Dr. Edward Zulkoski

Description	Focused on integrating the *SuMo* mutation testing framework into Quantstamp's smart contract auditing workflow, enhancing automation and reliability in security assessments.
15 Mar. 2021 – Nov. 2021	**Research Fellow**, Software And Knowledge-Based Systems (SaKS) group, CNR–I.A.S.I. (Istituto di Analisi dei Sistemi ed Informatica "A. Ruberti"), Rome, Italy.
Project	PRIN 2017 – Solutions for Engineering Microservices Architectures (SISMA)
Supervisors	Prof. Antonia Bertolino, Prof. Guglielmo De Angelis
Description	Contributed to improving the quality of microservice-based architectures by designing and implementing field testing techniques, enabling testing activities directly in production environments.

Teaching Experience

2024–Present	Tutor, *Software Engineering*, University of Camerino
2022–Present	Supervisor of Bachelor's and Master's theses, University of Camerino
Apr. 2025 – May 2025	Lecturer, *"Blockchain: Solutions, Application Scenarios and Opportunities"*, 1st Level Master *Digital Solutions Manager*, University of Camerino
22–26 Jan. 2024	Local organizer and lecturer, *"International Winter School on Blockchain Technology and Applications – Hyperledger"*, University of Camerino
12–16 Dec. 2022	Local organizer and lecturer, *"International Winter School on Blockchain Technology and Applications – Hyperledger"*, University of Camerino

Publications

2025	**Morena Barboni**, Guglielmo De Angelis, Andrea Morichetta, and Andrea Polini. *"Wielding blockchain transactions for capture-replay testing of upgradeable smart contracts." ACM Transactions on Internet Technology (ToIT)*, 2025.
2025	**Morena Barboni**, Filippo Lampa and Andrea Morichetta, Andrea Polini. *"Alchemist: LLM-driven test generation using Solidity mutants and the scientific method." International Conference on Blockchain and Cryptocurrency (ICBC)*, 2025.
2025	**Morena Barboni**, Filippo Lampa, Andrea Morichetta, Andrea Polini, and Edward Zulkoski. *"Alchemist: LLM-driven test generation using Solidity mutants and the scientific method." International Conference on Blockchain and Cryptocurrency (ICBC)*, 2025.
2025	**Morena Barboni**, Filippo Lampa, Andrea Morichetta, Andrea Polini, and Edward Zulkoski. *"Mutant-driven test generation for Ethereum smart contracts via LLMs." IEEE International Conference on Artificial Intelligence Testing (AITest)*, 2025.
2025	**Morena Barboni**, Filippo Lampa, Andrea Morichetta, and Andrea Polini. *"Optimizing smart contract testing via neural-MCTS test prioritization." International Conference on Blockchain Technology and Emerging Applications (BlockTEA)*, 2025.
2025	**Morena Barboni**, Filippo Lampa, Yuri Monti, Andrea Polini, and Federico Valeri. *"Mock once, test twice: reusing mocks for integration testing in microservice architectures." International Conference on the Quality of Information and Communications Technology (QUATIC)*, 2025.
2024	**Morena Barboni**, Andrea Morichetta, Andrea Polini, Sebastian Banescu, and Edward Zulkoski. *"Mutation testing of smart contracts as a service." International Conference on the Quality of Information and Communications Technology (QUATIC)*, 2024.
2024	Sebastian Banescu, **Morena Barboni**, Andrea Morichetta, Andrea Polini, and Edward Zulkoski. *"Enhanced mutation testing in support of smart contract code inspection." International Conference on Blockchain and Cryptocurrency (ICBC)*, 2024.

| 2023 | **Morena Barboni**, Guglielmo De Angelis, Andrea Morichetta, and Andrea Polini. *"CATANA: replay testing for the Ethereum blockchain." IFIP International Conference on Testing Software and Systems (ICTSS), 2023.* |

| 2023 | **Morena Barboni**, Antonia Bertolino, and Guglielmo De Angelis. *"Flakiness goes live: insights from an in vivo testing simulation study." Information and Software Technology (IST), 2023.* |

| 2023 | **Morena Barboni**, Francesco Casoni, Andrea Morichetta, and Andrea Polini. *"ReSuMo: a regression strategy and tool for mutation testing of Solidity smart contracts." Software Quality Journal (SQJ), 2023.* |

| 2022 | **Morena Barboni**, Francesco Casoni, Andrea Morichetta, and Andrea Polini. *"ReSuMo: regression mutation testing for Solidity smart contracts." International Conference on the Quality of Information and Communications Technology (QUATIC), 2022.* |

| 2022 | **Morena Barboni**, Andrea Morichetta, and Andrea Polini. *"SuMo: a mutation testing approach and tool for the Ethereum blockchain." Journal of Systems and Software (JSS), 2022.* |

| 2022 | **Morena Barboni**, Andrea Morichetta, and Andrea Polini. *"Smart contract testing: challenges and opportunities." IEEE/ACM 5th International Workshop on Emerging Trends in Software Engineering for Blockchainv(WETSEB), 2022.* |

| 2021 | **Morena Barboni**, Antonia Bertolino, and Guglielmo De Angelis. *"What we talk about when we talk about software test flakiness." International Conference on the Quality of Information and Communications Technology (QUATIC), 2021.* |

| 2021 | **Morena Barboni**, Andrea Morichetta, and Andrea Polini. *"Sumo: a mutation testing strategy for Solidity smart contracts." Proceedings of the IEEE/ACM International Conference on Automation of Software Test (AST '21). IEEE, 2021.* |

Personal skills and competences

Mother tongue — **Italian**

Other language(s)

Self-assessment
European level[(*)]

	Understanding		Speaking		Writing
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C1	C1	C1	C1
French	A1	A1	A1	A1	A1

[(*)]*Common European Framework of Reference* (CEF) level