

DAVIDE MOLINELLI

SOFTWARE ENGINEER



PERSONAL DATA

- 7 September 1994
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EDUCATION

- PhD in Informatics**
Università della Svizzera Italiana
2020-2025
Thesis - A Neuro-Symbolic Approach for Test Oracle Generation
- M. Sc. in Computer Science and Engineering**
Politecnico di Milano
2016-2019
- B. Sc. in Computer Science and Engineering**
Politecnico di Milano
2016-2013

LANGUAGES

- Italian** - Mother Tongue
- English** - Proficient (B2/CI)
(self-assessed)
- Open to learn German and French*

SKILLS

Hard Skills

Programming Languages

- Java
- Python
- TypeScript
- JavaScript

AI/ML

- HuggingFace
- PyTorch
- Pandas

Java Stack

- JavaParser
- JUnit
- Pitest

I am a postdoctoral researcher at the Università della Svizzera Italiana (USI) and earned my Ph.D. in December 2025 with a dissertation that defines a neuro-symbolic approach combining AI models with static analysis to infer test oracles and automate the software verification process. I enjoy integrating cutting-edge AI technologies into the entire software development lifecycle with the aim of automatizing routine tasks while improving software quality. My current research focuses on designing agent-based AI orchestrators that coordinate specialized agents to automatically generate entire test suites. This applied research aims to make the developed projects available for industrial use, thereby contributing concretely to technological progress. In addition to my primary research, I have a strong interest in UX/UI design, data analysis and visualization, as well as 3D web modeling

WORK EXPERIENCE

- Postdoctoral Researcher**
Università della Svizzera Italiana (USI) - Lugano (Switzerland)
February 2026 - Present
 - Investigating agentic AI architectures where an orchestrator coordinates specialized agents to automate unit test case and test suite generation
 - Ongoing research on neuro-symbolic approaches at the intersection of Software Engineering, AI, and Software Testing
 - Contributing to academic publications and collaborating with research groups in the field of automated Software Testing
- Fullstack Developer**
Medacta International - Castel San Pietro (Switzerland)
October 2019 - April 2020
 - Contributed to the digitalization strategy of the company by designing and developing web applications supporting pre- and post-operative workflows for surgeons and patients
 - Delivered full-stack features across both front-end interfaces and back-end services, ensuring their reliability and usability

PUBLICATIONS

- Predicting Failures in Smart Human-Centric EcoSystems**
Niccolò Puccinelli, Davide Molinelli, Noura El Moussa, Matteo Ciniselli, Mauro Pezzè
ICSE 2026 - Rio de Janeiro (Brazil)
- Do LLMs Generate Useful Test Oracles? An Empirical Study With an Unbiased Dataset**
Davide Molinelli, Luca Di Grazia, Alberto Martín López, Michael D. Ernst, Mauro Pezzè
ASE 2025 - Seoul (South Korea)

Web Stack

HTML D3.js Flask Vite
Express Node.js Three.js
CSS

Version Control Systems

Git GitHub

Soft Skills

UI/UX

Affinity Illustrator Figma

Photography

Lightroom

Research

Writing Peer Review

Mentoring

Personality

Curiosity Willpower
Patience Open-minded

- **Tratto: A Neuro-Symbolic Approach to Deriving Axiomatic Test Oracles**

Davide Molinelli, Alberto Martí López, Elliott Zackrone, Beyza Eken, Michael Ernst, Mauro Pezzè

ISSTA 2025 - Trondheim (Norway)

- **Health of Smart Ecosystems**

Noura El Moussa, Davide Molinelli, Mauro Pezzè, Martin Tappler

ESEC/FSE 2021 - Athens (Greece)

- **Voice-Based Virtual Assistants for User Interaction Modeling**

Marco Brambilla, Davide Molinelli

ICWE 2021 - Biarritz (France)

Recognition - Best Demo Paper Award

ACADEMIC PROJECTS

Visit my personal portfolio at dmolinelli.dev

PERSONAL INTERESTS

Photography, Traveling, Reading, Hiking, Running, UX/UI Design, Gardening, Psychology, 3D Modeling, Digital Art

REFERENCES

Mauro Pezzè - mauro.pezze@usi.ch

PhD Advisor

- Professor at Università della Svizzera Italiana (Switzerland) e Milano Bicocca (Italy).
- IEEE Transaction of Software Engineering (TSE) Editor in Chief

Dr. Alberto Martín López - alberto.martin@us.es

PhD Co-Advisor

- I am a Beatriz Galindo Distinguished Professor at the University of Seville

Dr. Luca Di Grazia - luca.digrazia@unisg.ch

PhD Co-Advisor

- Great Minds Fellowship at the University of St. Gallen