

Francesco Pontiggia

University Assistant  (Last update: March 2025)

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RESEARCH INTERESTS

Probabilistic Model Checking | Probabilistic Programming | Formal Languages | Temporal Logics | Automata Theory

EDUCATION

Research Visit | RWTH Aachen (DE) Nov. 2023 - Jan. 2024

MOVES group headed by Prof. Dr. Joost-Pieter Katoen.

Doctoral programme Logics in Computer Science | TU Wien (AT) July 2022 - ongoing

Topic: *Verification and Synthesis of Probabilistic Programs*.

Supervisor: Prof. Dr. Ezio Bartocci. Co-supervisors: Dr. Michele Chiari and Prof. Dr. Laura Kovács.

MSc Degree, Computer Science and Engineering | Politecnico di Milano (IT) 2021

Final Grade: 110/110 *cum Laude*.

Erasmus+ Study Program | Universiteit Utrecht (NL) Sept. 2019 - Jan. 2020

Department of Information and Computing Science. GPA: 8.0/10.

BSc Degree, Engineering of Computing Systems | Politecnico di Milano (IT) 2018

Final Grade: 106/110.

EXPERIENCE

University Assistant | TU Wien (AT) July 2022 - currently

Trustworthy Cyber-Physical Systems Research Group.

Project Assistant | TU Wien (AT) Nov. 2021 - June 2022

Probabilistic Invariant Generation (ProbInG) Lab.

ACADEMIC SERVICE & GRADUATE ACTIVITY

Artifact Evaluation Committee: CAV'24, FM'24.

Reviewer: SAC-SVT'25, FM'23, TACAS'23, QEST'23, QEST'22.

Summer Schools:

- Advanced Functional Programming Summer School, Universiteit Utrecht (NL), 2021.
- Probability in Computer Science Ph.D. School, ETAPS, Copenhagen (DK), 2024.

Collaborations: Prof. Dr. Milan Česka, Brno University of Technology (CZ). Visited in Nov. 2024.

Teaching: Tutor for Advanced Functional Programming (TU Wien), SS22, SS23, SS24, SS25.

SOFTWARE PROJECTS

POPACheck | *CORPORA Lab*

2023 - ongoing

An extension of POMC for probabilistic programs with recursion, conditioning and nested queries.

HyperPAYNT/PHSynth | *ProbInG Lab*

2022 - ongoing

Two tools for synthesizing controllers for Markov Decision Processes against probabilistic hyperproperties.

POMC | *Master Thesis*

2020 - 2021

A model checker for procedural Java-like programs with exceptions.

PEER- REVIEWED PUBLICATIONS

- **POPACheck: A Model Checker for Probabilistic Pushdown Automata**
Francesco Pontiggia, Ezio Bartocci, Michele Chiari
International Conference on Computer Aided Verification (CAV), 2025.
- **Decentralized Planning Using Probabilistic Hyperproperties**
Francesco Pontiggia, Filip Macák, Roman Andriushchenko, Michele Chiari, and Milan Češka
International Conference on Autonomous Agents and Multiagent Systems (AAMAS), 2025.
- **A Model Checker for Operator Precedence Languages.**
Michele Chiari, Dino Mandrioli, Francesco Pontiggia, Matteo Pradella
ACM Transactions on Programming Languages and Systems (TOPLAS), 2023.
- **Deductive Controller Synthesis for Probabilistic Hyperproperties.**
Roman Andriushchenko, Ezio Bartocci, Milan Češka, Francesco Pontiggia, Sarah Sallinger
International Conference on Quantitative Evaluation of Systems (QEST), 2023.
- **Verification of Programs with Exceptions Through Operator Precedence Automata.**
Francesco Pontiggia, Michele Chiari, Matteo Pradella
International Conference on Software Engineering and Formal Methods (SEFM), 2021.

OTHER SCIENTIFIC WORKS

- **Exact Inference for Nested Discrete Probabilistic Programs**
Francesco Pontiggia, Ezio Bartocci, Michele Chiari
Languages for Inference Workshop (LAFI, colocated with POPL), 2025.

SKILLS & CERTIFICATES

Programming Languages: Haskell, C/C++, Python, Java, R, SQL.

Frameworks: The LLVM Compiler Infrastructure and Clang Frontend, The Protégé Ontology Framework, JAVA Akka and the Actor model, SparkJava and REST paradigm.

NVIDIA DLI Certificate – Fundamentals of Accelerated Computing with CUDA C/C++, 2020.