



ALBERTO BOMBARDELLI

PhD Candidate in Computer Science

@ abombardelli@fbk.eu

@ albertobombardelli123@gmail.com

linkedin.com/in/alberto-bombardelli-b3b141162

0000-0003-3385-3205

CURRENT ROLE & RESEARCH WORK

I am a PhD candidate in Computer Science at the University of Trento with a PhD scholarship funded by Fondazione Bruno Kessler under the supervision of Prof. Stefano Tonetta.

My PhD focuses on **Symbolic Model Checking** for trace properties and hyperproperties, with a particular emphasis on **compositional reasoning** and **SMT-based verification**.

I contributed to the design of a **compositional framework** (OCRA), enabling local components to verify trace properties independently. The global specification is validated by checking that the asynchronous composition of these local properties satisfies the system-wide requirements.

I have worked on **verifying fragments of LTL (modulo theories)**, a distributed variant of **Metric Temporal Logic** and on the definition and verification of **asynchronous hyperproperties**.

I expect to graduate in **October 2025**.

WORK EXPERIENCE

Software Developer

Fondazione Bruno Kessler

2017 – 2021

Trento, Italy

Part time C Software Developer on the formal verification tools OCRA, nuXmv, NuSMV and HyCOMP for the former Embedded System Unit.

Supervisor: Stefano Tonetta

Head of the unit: Alessandro Cimatti

EDUCATION

International Graduate Visiting Student

IMDEA Software Institute

Jan-May 2024

Madrid, Spain

I worked with Prof. César Sánchez on the topic on the defining and verifying a decidable asynchronous hyperlogic to express diagnosability and non-interference properties.

PhD in Computer Science

University of Trento

2021 – present

Trento, Italy

Supervisor: Stefano Tonetta

Master Degree in Computer Science

University La Sapienza of Rome

2019-2021

Rome, Italy

Final Score: 110/110 cum laude

Bachelor Degree in Computer Science

University of Trento

2016-2019

Trento, Italy

Final Score: 98/110

TECHNICAL SKILLS

Python

C/C++

LaTeX

C#

Docker/Singularity

Yacc/BISON

ANTLR4

Godot

Javascript

PROJECTS & TOOLS

COMPASTA

Fondazione Bruno Kessler

- Funded by the European Space Agency (ESA)
- Combine Early V&V tool with Architectural design and deployment tool
- Contribution: Defining the semantics of the hierarchy and the component scheduling.

OCRA

Fondazione Bruno Kessler

- Contract-based design tool for Requirements analysis of discrete and hybrid system
- Hierarchical Component-based System with contract expressed via temporal logic
- My contribution: maintenance, parametrized mode, timed mode, asynchronous composition.

nuXmv

Fondazione Bruno Kessler

- Tool for symbolic model checking of infinite-state Symbolic Transition System
- Supports both invariant and LTL modulo-theory specifications
- My contribution: bug fixing, integration of research work in the tool

PUBLICATIONS

SPIN25 *[to appear]*: “(Asynchronous) Temporal Logics for Hyperproperties on Finite Traces”

[Bombardelli, Bozzelli, et al.](#)

CAES24: “COMPASTA = COMPASS + TASTE”

[Bombardelli, Bonizzi, Bozzano, Cavada, Cimatti, Griggio, Nicolodi, et al.](#)

JPK60: “Another Look at LTL Modulo Theory over Finite and Infinite Traces”

[Bombardelli, Cimatti, Griggio, et al.](#)

FSTTCS24: “Unifying Asynchronous Logics for Hyperproperties”

[Bombardelli, Bozzelli, et al.](#)

iFM23: “Symbolic Model Checking of Relative Safety LTL Properties”

[Bombardelli, Cimatti, Tonetta, et al.](#)

DATE23: “Metric Temporal Logic with Resettable Skewed Clocks”

[Bombardelli and Tonetta](#)

ADA23: “COMPASTA: Integrating COMPASS Functionality into TASTE”

[Bombardelli, Bonizzi, Bozzano, Cavada, Cimatti, Griggio, Nazaria, et al.](#)

NFM23: “Reasoning with Metric Temporal Logic and Resettable Skewed Clocks”

[Bombardelli and Tonetta](#)

NFM22: “Asynchronous Composition of Local Interface LTL Properties”

[Bombardelli and Tonetta](#)

IMBSA22: “COMPASTA: Extending TASTE with Formal Design and Verification Functionality”

[Bombardelli, Bozzano, et al.](#)

OTHER EXPERIENCES

Summer School

[Marktoberdorf Summer School on Safety and Security through Formal Verification](#)

📅 Marktoberdorf, Germany 📍 Aug. 2023

Summer School

[EuroProofNet Summer School Verification Technology, Systems & Applications](#)

📅 Saarbrücken, Germany 📍 Sep. 2022

Subreviewer

[CAV22, TACAS23-24, FMCAD23, NFM23, FM24, CSL25](#)

Artifact Evaluation Committee

[TACAS25, FM24](#)

Journal Reviewers

[FAC23](#)

LANGUAGES

Italian (Native)



English (B2 certified)



Spanish (A2 self-assessed)

