PERSONAL INFORMATION

Luca Geatti

✉ name _dot_ surname _at_ uniud _dot_ it

🖰 https://users.dimi.uniud.it/%7Eluca.geatti/

Gender Male | Date of birth 23 October 1993 | Nationality Italian

WORK

February 27th, 2023 - ongoing

Research Associate (RTD-a)

Research Associate (RTD-a) at University of Udine. *Supervisor*: Angelo Montanari.

November 1st, 2022 - February 26th, 2023

Research Assistant (Assegnista di Ricerca)

Postdoc position (assegno di ricerca) at University of Udine. *Supervisor*: Angelo Montanari.

November 1st, 2021 - October 31st, 2022

Research Assistant (Assegnista di Ricerca)

Postdoc position (assegno di ricerca) at the Free University of Bozen/Bolzano. *Supervisor*: Nicola Gigante.

EDUCATION

November 1st, 2018 - October 31st, 2021

PhD Student in Computer Science

PhD student at Fondazione Bruno Kessler (FBK, Trento, Italy) and University of Udine (Udine, Italy). My PhD focused on Temporal Logics and Automata Theory with particular attention of their expressive power and their satisfiability and realizability (reactive synthesis) problems.

Supervisors — Alessandro Cimatti, Angelo Montanari, Stefano Tonetta

Research topics —
- formal verification of cyber physical systems
- automata theory
- temporal logics
- automatic synthesis
- tableaux methods
- requirement analysis

PhD Thesis Defense — On March 11th, 2022, I obtained the PhD in Computer Science at University of Udine with honors (cum laude).

September 2016 - March 2018

Master Degree in Computer Science

University of Udine, Udine, Italy

Marks — 110/110 cum laude

Master Thesis —
- Title: One-Pass Tree-Shaped Tableau Systems for Timed Temporal Logics
- Supervisor: Prof. Angelo Montanari
- The work in the master thesis has been published into a journal paper on *Information and Computation*.

Awards —
- Best graduate student in Computer Science in the academic year 2016/2017.
- BCC (Banche di Credito Cooperativo) prize for the best master thesis in Computer Science in the academic year 2016/2017.

2012–2015	**Bachelor Degree in Web Technologies**
	University of Udine, Udine, Italy
Marks	109/110
Bachelor Thesis	– Title: Verifica di proprietà locali su BRS
	– Supervisor: Prof. Marino Miculan

2007–2012	**High school diploma**
	Liceo scientifico statale G. Marinelli, Udine, Italy
Marks	75/100

PAST WORK EXPERIENCE

September 2018 – October 2018

Programmer

Fondazione Bruno Kessler (FBK), Trento, Italy

– Working at the Embedded System (ES) unit at FBK.
– Contributing to some unit's projects about formal verification of cyber physical systems.
– Collaborating with Boeing in the context of a unit's project.

AWARDS

Awards

– Best Paper Award at SEFM 2021 (the 19th International Conference on Software Engineering and Formal Methods) for the paper "Fairness, Assumptions, and Guarantees for Extended Bounded Response LTL+P Synthesis".
– Best graduate student in Computer Science of University of Udine in the academic year 2016/2017.
– BCC (Banche di Credito Cooperativo) prize for the best master thesis in Computer Science of University of Udine in the academic year 2016/2017.

SOFTWARE PROJECTS

Research tools

BLACK – Co-developer of BLACK (Bounded Ltl sAtisfiability ChecKer). BLACK is a state-of-the-art tool for temporal reasoning. It features symbolic satisfiability checking algorithms for several extensions of LTL, like for instance LTL on finite traces, LTL with past operators, LTLf modulo theory, etc. In addition, it supports the extraction of unsatisfiable core and a trace checking utility. Software available at: `https://github.com/black-sat/black`.

TRICker – TRICker (Timing Requirements Integration Checker) is a tool for checking safe decomposition of timing requirements. Software available at: `https://users.dimi.uniud.it/~luca.geatti/tools/tricker.html`

ebr-ltl-synth – A reactive synthesis tool for the Extended Bounded Response fragment of Linear Temporal Logic. Software available at: `https://users.dimi.uniud.it/~luca.geatti/tools/ebrltlsynth.html`

GRACE – GRACE (GR-ebr reAlizability CheckEr) is a realizability checker for GR-EBR specifications. Software available at: `https://users.dimi.uniud.it/~luca.geatti/tools/grace.html`

Co-supervisor

– Master Thesis of Gabriele Venturato: "A SAT-based encoding of the one-pass and tree-shaped tableau system for LTL+Past".
– Master Thesis of Renato Acampora: "Controller Synthesis for Timeline-based Games".

Tutorials

– Laboratory accepted at AAAI 2023 on *Hands-on with the BLACK satisfiability checker*.
– Tutorial at IJCAI-ECAI 2022 on *Tableau methods for linear-time temporal logics* (`https://ijcai-22.org/tutorials/`).

INVITED TALKS

31st March 2022 — Invited presentation for the Whitemech group. Title: "Symbolic Reactive Synthesis from Extended Bounded Response LTL+P specifications". Web link: `https://whitemech.github.io/meetings/`

5th May 2022 — Invited presentation for the Whitemech group. Title: "A First-Order Characterization Of Safety And Co-safety Languages, And Some Expressiveness Properties Of (Fragments of) LTLf". Web link: `https://whitemech.github.io/meetings/`

CONFERENCE TALKS

2022 — IJCAI 2022, 31st International Joint Conference On Artificial Intelligence
— FOSSACS 2022, 25th International Conference on Foundations of Software Science and Computation Structures

2021 — SEFM 2021, 19th International Conference on Software Engineering and Formal Methods
— ESSLLI 2021, 32nd European Summer School in Logic, Language and Information
— GandALF 2021, The Twelfth International Symposium on Games, Automata, Logics, and Formal Verification
— TACAS 2021, 27th International Conference on Tools and Algorithms for the Construction and Analysis of Systems, on-line event (due to Covid-19 emergency)

2020 — FMCAD 2020, Formal Methods in Computer-Aided Design 2020, on-line event (due to Covid-19 emergency)

2019 — ICTCS 2019, 20th Italian Conference on Theoretical Computer Science, 9-11 September 2019, Como, Italy
— TABLEAUX 2019, The 28th International Conference on Automated Reasoning with Analytic Tableaux and Related Methods, Middlesex University, London, September 3-5, 2019

2018 — GandALF 2018, the Ninth International Symposium on Games, Automata, Logics, and Formal Verification, Saarbrücken (Germany) in September 2018

PROGRAM COMMITTEE

— Chair of Overlay'22 (`https://overlay.uniud.it/workshop/2022/`)
— PC member of Overlay'21 (`https://overlay.uniud.it/workshop/2021/`)

REVIEW SERVICE

— STACS'22, SWAT'22, Journal of Innovations in Systems and Software Engineering
— TACAS'21, IEEE-ICTAI'21, NFM'21
— TACAS'20, ECAI'20, CONCUR'20, FSTTCS'20, GandALF'20, NFM'20, RuleMLRR'20
— IJCAI'19, SEFM'19

APPROACH TO RESEARCH

My research work is mainly about Temporal Logics and Automata Theory (that are sub-fields of Formal Verification and Artificial Intelligence), with particular attention to the problems of satisfiability, model checking, reactive syntesis and planning. My research activity has always been in the intersection between theory (the investigation of formal and theoretical aspects of my fields of study) and practice (the design, implementation and experimental evaluation of algorithms for the considered problems).

PERSONAL SKILLS

Mother tongue   Italian

Other languages

UNDERSTANDING		SPEAKING		WRITING
Listening	Reading	Spoken interaction	Spoken production	
English				
C1	C1	C1	C1	C1
self-assessed				

Levels: A1 and A2: Basic user – B1 and B2: Independent user – C1 and C2: Proficient user
Common European Framework of Reference for Languages

Programming Languages
– Python
– C++
– C
– Haskell
– Java

PRIVACY

Autorizzo il trattamento dei miei dati personali ai sensi dell'art. 13 D. Lgs. 30 giugno 2003 n°196 – "Codice in materia di protezione dei dati personali" e dell'art. 13 GDPR 679/16 – "Regolamento europeo sulla protezione dei dati personali"