LÉO GOURDIN

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EDUCATION

Verimag/TIMA laboratories, UGA, Grenoble, France 2020-2023
PhD, "Formal Validation of Intra-Procedural Transformations by Defensive Symbolic Simulation"
Supervised by Sylvain Boulmé and Frédéric Pétrot

ENSIMAG, UGA, Grenoble, France 2017 - 2020
Engineering (Master) degree — Work-study contract

Aalto University, Helsinki, Finland September 2019 - December 2019
ERASMUS Semester in machine learning, data science, computer vision and big data

IUT, UBFC, Dijon, France 2015 - 2017
Two year degree (DUT) in computer science

PUBLICATIONS

In reverse chronological order:

- OOPSLA 2023 (paper): *Formally Verifying Optimizations with Block Simulations.*
- TAP 2023 (paper): *Testing a Formally Verified Compiler.*
- ICOOOLPS 2023 (paper): *Lazy Code Transformations in a Formally Verified Compiler.*
- RISC-V Summit EU (abstract+poster): *Formally Verified Advanced Optimizations for RISC-V.*
- CPP 2022 (paper): *Formally Verified Superblock Scheduling.*
- Coq Workshop 2021 (abstract): *Certifying assembly optimizations in Coq by symbolic execution with hash-consing.*
- AFADL 2021 (short paper): *Formally verified postpass scheduling with peephole optimization for AArch64.*

Submitted (preprint): *Formally Verifying Optimizations with Block Simulations.*

RESEARCH

Verimag December 2023 - Present
Post-doc *Grenoble, France*

· Supervisors: Marie-Laure Potet and Sylvain Boulmé
· Goal: integrating security countermeasures into the CompCert compiler.
· Purpose: preventing fault injection attacks on programs.
· We are interested in proving correctness, adequacy, and robustness properties of countermeasures.
· This work is part of the Arsene French research project.

Verimag/TIMA October 2020 - December 2023
PhD Student *Grenoble, France*

· Supervisors: Sylvain Boulmé and Frédéric Pétrot ¡¡¡¡¡¡¡ HEAD
· Skills: Formal proof, Certified optimizations, Compilers, Coq, Ocaml, assembly

· Formalization and implementation of a translation validation framework by symbolic interpretation, proved correct in Coq. This tool defensively validates a class of transformations, and was integrated in the Chamois-CompCert fork.

EXPERIENCE

UGA 2021 - 2022
Teaching assistant *Grenoble, France*

· ALGO L3 S5 (UFR IM^{2}AG) - Tutorials (11 sessions), course about algorithmics and complexity
· Databases project (ENSIMAG) - Supervision of practical work (18 hours)
· C project about building a graphical framework (ENSIMAG) - Supervision of practical work (26 hours)

Asygn 2017 - 2020
Apprentice Engineer *Grenoble, France*

· Supervisor: Christophe Leblanc
· Skills: Algorithmics, Python, Verilog, Matlab, IT/Linux
· Software engineering for embedded platforms: desktop and android RFID communication API.
· Research and development on RFID chips: real-time data analysis on-chip system.
· IT manager throughout the period.

BU-CROOCS (Bangkok University Center of Research in Optoelectronics, Communications and Control Systems) Spring 2017
Second year internship *Bangkok, Thailand*

· Supervisor: Romuald Jolivot
· Skills: Image processing, Algorithmics, Python, OpenCV
· Small research project on a plant phenotyping system using image processing: an autonomous vision software for Raspberry Pi designed to study plant growth using multiple cameras.

SERVICE

I participated in:

- SICT 2023 and SICT 2022 Organizing Committee
- ESOP 2023 and ESOP 2022 Artifact Evaluation Committee

LANGUAGES

- French: mother tongue
- English: fluent