Dr. Marc Chevalier

Software Engineer

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December 4, 1993

French

rsa4096/420AD16B

About me

I am a computer scientist specialized in static analysis to make software safer. I also have strong background in math and extensive experience in big software development.

Social Networks

marc-chevalier

Marc_Chevalier6

marc-chevalier

gitlab.marc-chevalier.com

Programming

C++20

Python

OCaml

Rust | C# | Java | x86 | LaTeX | Bash

Working Experience

since 2021 — **Software Engineer** — Snyk, Zürich, CH
Develop fast and multi-language static analysis methods:
- compilation of input code to intermediate representation,
- language-agnostic analysis of this intermediate representation,
- detection of security flaws with ML-powered rules.

2017 – 2020 — **Mathematic Lectures** — LFDV, CRI, Paris, FR
Lectures on logic, set theory, functions and linear algebra. 104h

2017 – 2020 — **Tutorial of Semantics Lectures** — ENS, Paris, FR
Exercise and practical sessions + 2 lectures, 3rd year of B.Sc. 75h

2017 — **Research Internship – Compilation** — Roma Team, ENS de Lyon, Lyon, FR
Static analysis of programs with complex data-structures for improvement of scheduling strategies at compile-time in LLVM.

2016 – 2017 — **Research Internship – Program Analysis** — Antique Team, ENS, Paris, FR
Verification by abstract interpretation of security properties of embedded C software. Handling of inline assembly in Astrée static analyzer.

2015 — **R&D Internship** — TrustInSoft, Paris, FR
Formal verification of `libiconv`. Extension of Frama-C for C++.

2014 – 2015 — **Oral Examiner in Mathematics** — Aux Lazaristes CPGE, Lyon, FR

2014 — **Research Internship** — Alco Team, LIX, Palaiseau FR
Characterization of the functions calculated by a Turing machine with a bound on the number of transitions with a change of state.

Education

2017 – 2020 — **PhD. in Computer Science** — Antique Team, ENS, Paris, FR
Proving the security of software-intensive embedded systems by abstract interpretation. Collaboration with AbsInt GmbH (Saarbrücken, DE) and Airbus.

2015 – 2016 — **Second year of M.Sc. in Computer Science** — EPFL, Lausanne, CH
M.Sc. in computer science obtained with highest honors (5.25/6).

2014 – 2015 — **First year of M.Sc. in Computer Science** — ENS de Lyon, Lyon, FR
Coordinator of our group project: Deep Thoughts Project (see `projetpp.github.io`), a natural language questions answering framework.

2013 – 2014 — **B.Sc. in Computer Science** — ENS de Lyon, Lyon, FR
B.Sc. in computer science obtained with honors (15.84/20).

2011 – 2013 — **CPGE MPSI/MP*** — Sainte Geneviève, Versailles, FR
2 years intensive preparatory classes to the entrance exam French prestigious "Grandes Écoles". Math/Physics /Computer science.

Academic Life

Publication

2020 — **Sharing Ghost Variables in a Collection of Abstract Domains**
Marc Chevalier, Jérôme Feret
VMCAI 2020

Student

2019 — **Jérôme Boillot, ENS de Lyon (intern, 3rd year B.Sc.)**
Semantics of inline x86 assembly blocks in C code.

Reviews

2022 – 2023 — Chair of the Artifact Evaluation Committee for the Static Analysis Symposium — SAS

2020 — Member of Artifact Evaluation Committee — SAS

Misc.

2018 – 2020 — **Departement Board Member** — ENS, Paris, FR
Representative of non-permanent staff in the CS department board.

Dr. Marc Chevalier

Software Engineer

Skills

- Computer Science
  - Software Design
  - Static Analysis
  - Software Security
  - Compilers
  - Algorithmics
  - Machine Learning
- Mathematics
  - Logic
  - Algebra
  - Probability
  - Calculus

Academic Links

research.marc-chevalier.com

dblp: Chevalier:Marc

Scholar: LbfW-roAAAAJ

Tools

Git | Coq | Matlab | Maple | Sage | Mathematica | Sympy | Windows | Debian | Ubuntu | LibreOffice | Microsoft Office

Languages

French	●●●●●
English	●●●●○
German	●●○○○
Chinese	●○○○○

Competitions

2014 – 2016	SWERC team contest of algorithmic programming	Porto, PT
2012	**International Physics Olympiads** Training camp for the experimental examination of IPhO (top 24)	ENS, Paris, FR
2010 – 2014	Prologin contest	FR

Projects & Software

since 2016	**Involved in Astrée** State of the art static analyzer based on abstract interpretation with industrial applications. `http://www.astreea.ens.fr/`	OCaml/C
since 2019	**Plato** Parts of standard Python library in OCaml. `https://github.com/marc-chevalier/plato`	OCaml
since 2019	**Socrates** Advanced and generic testing tool motivated by Astrée.	Python
since 2019	**OColor** Pretty printing library using `Format`'s semantic tags to generate well-parenthesized ANSI escape sequences: `https://github.com/marc-chevalier/ocolor`	OCaml
since 2014	**TuringSim** Template-intensive high-performance framework for simulation of abstract computation model: `https://gitlab.marc-chevalier.com/marc/turingsim`	C++
since 2011	**Introduction to Computability** A 300+ pages book introducing to computability theory (in french). `https://marc-chevalier.com/Calculabilite.pdf`	

Extra-Curricular Activities

Archery	Competition level – trainer
Ski	Competition level
Drama	13 years of practice (in French and English), opera fan
Classic languages	Greek, Latin, passionate for mythology
Misc.	First aid certificate, driver licence