Denis Merigoux

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Experience

Inria — **Paris, France**
Starting Research Position — *From Jan 2022*
- 3-year tenure track position obtained after a competitive screening process.
- Design and development of Catala, a programming language to translate law into code : `catala-lang.org`
- Technology transfer with the DGFiP, the French tax authority around rewriting the income tax computation application.

Microsoft Research — **Redmond, WA, USA**
Visiting Researcher — *Jun 2019 - Aug 2019*
- Collaboration on Steel, a new concurrent separation logic framework for the F* proof assistant.

Inria — **Paris, France**
PhD candidate — *Nov 2018 - Dec 2021*
- PhD topic: Proof-oriented domain-specific language design for high-assurance software
- Domain of expertise: programming language design, program verification, applied formal methods
- PhD dissertation awarded with the French national Computer Science Gilles Kahn 2022 prize.

Mozilla — **Paris, France**
Compiler Engineering Intern — *Aug - Oct 2018*
- To enable the use of Cranelift as a new backend of the Rust compiler, I refactored part of the code generation module of the Rust compiler to make it independent of the backend being used.
- This work led to the merging of a massive pull request (10,000 LOC) to the Rust compiler codebase in November 2018.

Inria — **Paris, France**
Research Engineer — *Feb - Jun 2018*
- As part of the Prosecco team, worked on the Everest project aiming to secure the Web security stack.
- Deployed the HACL* verified cryptographic library as a secure WebAssembly module.
- Designed WebAssembly/JS interoperability for a F*-proven version of the secure messaging protocol Signal.

Mozilla — **Mountain View, CA**
Summer Research Internship — *May - Aug 2017*
- Contributed to Cranelift (formerly Cretonne), a native code generator written in Rust.
- Designed a frontend API for translating to the Cranelift Intermediate Representation.

LIP6 (University Paris 6) — **Paris, France**
Research Internship — *Mar - Aug 2016*
- Worked around the Coccinelle project, used by the Linux kernel community to semi-automate repetitive code transformations.
- Designed a new solution for infering code transformation rules from examples, making it easier for developers to use Coccinelle.
- Implemented this solution in OCaml in 10,000 lines of code using techniques of code analysis and code clone detection.

Sopra Steria — **Paris, France**
Summer Software Engineer Internship — *Jun - Aug 2015*
- Analysed the state of the art of semantic web technologies to determine their usefulness in the company's context.
- Prototyped a new solution involving ontologies and SPARQL to improve productivity for handling models with hundreds of entities.

Education

Carnegie Mellon University, School of Computer Science — **Pittsburgh, PA**
Master of Science in Computer Science — *Sep 2016 - Dec 2017*
- Systems coursework: Introduction to Computer Systems, Distributed Systems, Parallel Computing.
- Other coursework: Foundations of Programming Languages, PhD-level Machine Learning, Databases.

École Polytechnique — **Palaiseau, France**
Bachelor of Science and Engineering, Major in Computer Science and Physics (GPA 3.93/4.0) — *Aug 2016*
Undergraduate then graduate studies in the French leading school for science and engineering, equivalent to MIT or Cambridge.
- Selected Computer Science coursework: Compilers (Pascal-like and ML-like languages), Advanced Programming, Introduction to Data Science, Computer Vision, Web development.
- Strong mathematical background in both Algebra and Calculus tested in the competitive entrance examination for École Polytechnique.
- Oustanding Investment in student activities certificate awarded by École Polytechnique.
- Also obtained the French *Diplôme d'Ingénieur*, equivalent to a Master's degree in Engineering.

Community Service

ICFP 2019: Member of the Artefact Evaluation Committee
ICFP 2020: Member of the Artefact Evaluation Committee
ProLaLa 2022: Program Committee co-chair and co-organizer
Journal of Cross-disciplinary Research in Computational Law: Editor (since mid-2022)
CRCL 2022: Track co-chair
ProLaLa 2023: Program Committee co-chair and co-organizer
OOPSLA 2023: Member of the External Review and Artefact Evaluation Committee
ICAIL 2023: Member of the Program Committee
CRCL 2023: Member of the Program Committee
POPL 2024: Member of the Program Committee

Invited talks (non exhaustive)

Dec 2019 - Jouy-en-Josas: Algothmic law and society (HEC Paris)
Feb 2020 - Los Angeles: UCI Law Tax Symposium (University of California Irvine)
Nov 2020 - Brussels: COHUBICOL Philosopher's seminar (VUB)
Sep 2021 - Online: MIT Law IdeaFlow (MIT)
Dec 2021 - Online: API Days conference
Apr 2022 - Barcelona: Conference on Algorithmic Law Design and Implementation (University of Barcelona)
Oct 2022 - Bordeaux: Algorithms for public decision (French National Computer Science Society)
Dec 2022 - Antwerp: Tax Administration 3.0 (University of Antwerp)

Outreach

2017 - 2022: Held a blog with posts about research.
2022: Several Hacker news posts about my research made it to the top 10: #1, #2.
Oct 2020: Invited on the podcast Cryptography FM by Nadim Kobeissi.
Nov 2022: Published an article on the French National Computer Science Society's blog hosted by the journal Le Monde.
Nov 2022: Published an article in 1024, the journal of the French National Computer Science Society.
Dec 2022: Invited on the podcast La voix du gradient by Grégoire Mialon et al.