

# Dr Christian Rinderknecht

Compiler Engineer, Domain-Specific Languages, Formal Methods

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## Key skills and Knowledge

- Language Design and Interpreter/Compiler Construction.
- Multidisciplinary engineering (SE, telecom, electronics)
- International work experience (France, Korea, Hungary, Sweden)
- Ex-college professor and Researcher
- Technical Documentation and Scholarly Publications
- Bilingual French/Spanish and Fluent English (C1 level 93%)

## Employment History

**2023-** Turnstiles Kft. (Budapest, Hungary)

*Founder & Compiler Engineer*

Freelance compiler engineer, syntax and semantics.

**2019-2023** LIGO lang (Paris, France)

*COO & Compiler Engineer*

Lead dev on the front-end of the LIGO compiler and the CameLIGO and PascaLIGO languages for smart contracts on Tezos.

**2018-2019** Nomadic Labs (Paris, France)

*Compiler Engineer*

Joined the core dev-team behind the Tezos cryptocurrency, where I can work on efficient, secure and self-governing blockchains with certified Smart Contracts, thanks to the OCaml programming language.

**2017-2018** GrAI Matter Labs (Paris, France)

*Compiler Engineer*

Design of a Domain-Specific Language based on OCaml for describing a new kind of computational neuromorphic spiking network, and implementation (in OCaml) of an interpreter and two compilers to OCaml, leveraging the existing ecosystem and tools.

**2016-2016** Wolfram | MathCore (Linköping, Sweden)

*Compiler Engineer*

Design and implementation (using OCaml) of a correct and complete set of parsers for the Modelica compiler of Wolfram SystemModeler, featuring a precise, correct and complete set of syntax errors thanks to the parser generator Menhir.

**2015-2016** Numalis (Montpellier, France)

*Compiler Engineer*

Development of tools in C++ and OCaml for assessing the loss of accuracy in floating-point calculations, by means of source-to-source transformations (standalone and based on Clang/LLVM) of C++ code.

**2014-2015** Cortus (Montpellier, France)

*Compiler Engineer*

Maintenance and development of a .NET compiler (in C# and OCaml) for Cortus microprocessors.

**2001-2014** *Researcher and University Professor* (France, Korea, Hungary)  
(École Supérieure d'Ingénieurs Léonard de Vinci, Konkuk University, Eötvös Loránd University) R&D on compiler construction, protocol verification, domain-specific language design (Internet of Things), augmented reality, web-based framework for e-learning. Teaching of programming to undergraduates and postgraduate students.

**2000** PolySpace Tech. (now MathWorks, Montbonnot, France)

*R&D Engineer*

Development of a static analyser for JavaCard, automatic testing, reverse-engineering and maintenance, case studies and sales support.

**1998-00** National Institute of Telecommunications (now Télécom SudParis)

*R&D Engineer* (Software for Networking Lab.)

R&D projects, specification-based test generation for telecommunication services, development of tools for protocol testing.

**1997-98** Alcatel-Alsthom CRC (now Alcatel-Lucent R&I, France)

*Case Engineer* (Object Architecture Unit)

Design of a software quality analysis for a C++ project (networking).

## Education

**1993-98** INRIA & Pierre and Marie Curie University (France)

*Ph.D. in Informatics (cum laude)*

Design and implementation of an analyser for ASN.1. Soundness proof of the BER (encoding rules). Working group at ISO on ASN.1 (London, 1997).

## Tools and formal languages

- *Programming languages*: Java, OCaml, Erlang, C<sup>#</sup>, C++, XSLT, Ada, Standard ML, Prolog, Pascal.
- *Software engineering*: Test generation, compiler construction, static analysis, program transformations, formal methods (specification, correctness)
- *Development tools*: Emacs, GNU Make, dune, git, shell scripting, scanning and parsing (sed, ocamllex, menhir) etc.
- *Free Software*: <http://github.com/rinderknecht>

## Publications and Honours

- 15 papers in journals and conferences, 3 technical reports.
- *Design and Analysis of Purely Functional Programs* (volume 15, *Texts in Computing*, College Publications, UK, Nov 2012, 660 pages).
- One of my mathematical articles is the source for the integer sequence <http://oeis.org/A261003>.
- I received a cheque from Knuth for finding an error in Volume 4 of *The Art of Computer Programming*.
- Translator in French of the love poems *Veintes poemas de amor y una canción desesperada* of Pablo Neruda (Gallimard Poésie, Paris, 1998).
- Editor and translator in Spanish of an anthology of poetry by Paul Valéry, *Las granadas* (Ediciones Rilke, Madrid, 2016).