Dr Christian Rinderknecht

Compiler Engineer, Blockchain VMs, DSLs, Formal Methods

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Key skills and Knowledge

- Programming Language Design and Interpreter/Compiler Construction
- Smart Contract languages and Virtual Machines for Blockchains
- Functional Languages
- Multidisciplinary engineering (SE, telecom, electronics, mechanics)
- Protocol Engineering and Model-based Test Generation
- 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
Freelance expert in compilers, program transformations, static analysis, logic systems (syntax and semantics — the two turnstile symbols).

2019-2025 LIGO (Paris, London)
COO of LIGOlang & Compiler Engineer
Design of the high-level smart contract language LIGO for the blockchain Tezos and lead dev on the compiler front-end of LIGO in OCaml.

2018-2019 Nomadic Labs (Paris, France)
Compiler Engineer
Developing with OCaml the Tezos blockchain, mainly interested in the layer-1 language Michelson.

2017-2018 GrAI Matter Labs (Paris, France)
Compiler Engineer
Design of a Domain-Specific Language for describing a new kind of computational neuromorphic spiking network, and implementation of a standalone interpreter and a transpiler to OCaml.

2016 Wolfram | MathCore (Linköping, Sweden)
Compiler Engineer
Design and implementation in 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.

2015 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 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, augmented reality, web-based framework for e-learning. Teaching of programming in the small, software engineering and internet protocols. Scholarly publications.

2000 PolySpace Tech. (now MathWorks, Montbonnot, France)
Compiler Engineer
Development of a static analyser for JavaCard, automatic testing, reverse-engineering and maintenance, case studies and sales support.

1998-2000 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. Scholarly publications.

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)
Formalisation of ASN.1, design and implementation of the front-end of an ASN.1 compiler in OCaml. Soundness proof of the Basic Encoding Rules (BER). Working group at ISO on ASN.1 (London, 1997).

Languages and Tools

- *Strong background in theory of programming.*
- *Programming languages*: OCaml, Java, Erlang, C♯, C++, XSLT, Ada, Standard ML, Prolog, Pascal.
- *Tools*: Emacs, Make, dune, git, shell, scanning and parsing (sed, ocamllex, menhir, tree-sitter) etc.
- *Markup technologies*: LaTeX, XML, DTD, Markdown, JSON.

Publications, Honours and Miscellanea

Informatics:

- Fifteen (15) papers in journals and conferences, three (3) technical reports.
- *Design and Analysis of Purely Functional Programs* (volume 15, *Texts in Computing*, College Publications, UK, Nov 2012, 660 pages). I translated my book into French for the same publisher: *Conception et analyse des programmes purement fonctionnels* (volume 12, *Cahiers de Logique et d'Épistémologie*, 2012).
- 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.*

Literature:

- Translator from Spanish to French of *Vingt poèmes d'amour et une chanson désespérée* by Pablo Neruda (Gallimard Poésie, Paris, 1998).
- Contributor of Buddhist vocabulary to the *Sanskrit Heritage* (French-Sanskrit dictionary, 1998) of Gérard Huet (`http://sanskrit.inria.fr/Heritage.pdf`).
- Translator from French to Spanish of *Las granadas* by Paul Valéry, (Ediciones Rilke, Madrid, 2016).
- Translator from Spanish to French of *Rimes* by Gustavo Adolfo Bécquer (L'Harmattan, Paris, 2024).
- Publisher of my own poetry (*Running on*) in English (2024).

Music:

- Cello player (Baroque *piccolo cello*).