Yannick Zakowski – Curriculum Vitae

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Research Positions Held

2020- Researcher (*Chargé de Recherche*) at Inria Lyon
Member of the CASH research group in the LIP laboratory.

2018-2020 Postdoctoral researcher at UPenn, within the Programming Language research group,
under the supervision of Steve Zdancewic.
Participant of the DeepSpec NSF-supported project.

2014-2017 PhD student at the ENS Rennes, hosted within the IRISA,
under the supervision of David Pichardie and David Cachera.
Topic: *"Verification of a Concurrent Garbage Collector."*
Teaching duties at the ENS Rennes and University of Rennes 1.

Publications

International Conferences

Note: The ICFP and POPL conferences are classified as journals since 2020, albeit they are still associated with a conference event. I therefore keep them classified here out of habit.

An abstract, certified account of operational game semantics
Peio Borthelle, Tom Hirschowitz, Guilhem Jaber and Yannick Zakowski
In the 34th European Symposium on Programming (ESOP'25)

A concurrency model based on monadic interpreters: Executable semantics for a concurrent subset of LLVM IR
Nicolas Chappe, Ludovic Henrio and Yannick Zakowski
In the 14th ACM SIGPLAN International Conference on Certified Programs and Proofs (CPP'25)

A Two-Phase Infinite/Finite Low-Level Memory Model
Calvin Beck, Irene Yoon, Hanxi Chen, Yannick Zakowski and Steve Zdancewic
In the 29th ACM SIGPLAN International Conference on Functional Programming (ICFP'24)

Abstract Interpreters: a Monadic Approach to Modular Verification
Sébastien Michelland, Laure Gonnord and Yannick Zakowski
In the 29th ACM SIGPLAN International Conference on Functional Programming (ICFP'24)

Choice Trees: Representing Nondeterministic, Recursive, and Impure Programs in Coq
Nicolas Chappe, Paul He, Ludovic Henrio, Yannick Zakowski and Steve Zdancewic
In the 50th ACM SIGPLAN Symposium on Principles of Programming Languages (POPL'23)

Formal Reasoning About Layered Monadic Interpreters
Irene Yoon, Yannick Zakowski and Steve Zdancewic
In the 27th ACM SIGPLAN International Conference on Functional Programming (ICFP'22)

Modular, Compositional, and Executable Formal Semantics for LLVM IR
Yannick Zakowski, Calvin Beck, Irene Yoon, Ilia Zaichuk, Vadim Zaliva, Steve Zdancewic
In the 26th ACM SIGPLAN International Conference on Functional Programming (ICFP'21)

An Equational Theory for Weak Bisimulation via Generalized Parameterized Coinduction
P. He, CK. Hur, Y. Zakowski, S. Zdancewic
In the 9th ACM SIGPLAN International Conference on Certified Programs and Proofs (CPP'20)

Interaction Trees – Representing Recursive and Impure Programs in Coq
L. Xia, Y. Zakowski, P. He, CK. Hur, G. Malecha, B. Pierce, S. Zdancewic
In the 47th ACM SIGPLAN Symposium on Principles of Programming Languages (POPL'20)

Compilation of Linearizable Data Structures: A Mechanised RG Logic for Semantic Refinement
Y. Zakowski, D. Cachera, D. Demange, D. Pichardie
In the Proceedings of the 33rd Annual ACM Symposium on Applied Computing (SAC'18) – Software Verification and Testing track

Verifying a Concurrent Garbage Collector using a Rely-Guarantee Methodology
Y. Zakowski, D. Cachera, D. Demange, G. Petri, D. Pichardie, S. Jagannathan and J. Vitek.
In Interactive Theorem Proving (ITP'17), LNCS 10499, Springer 2017.

National Conferences

Verifying a Concurrent Garbage Collector using a Rely-Guarantee Methodology
Y. Zakowski, D. Cachera, D. Demange, G. Petri, D. Pichardie, S. Jagannathan and J. Vitek.
In Interactive Theorem Proving (ITP'17), LNCS 10499, Springer 2017.

Journals

Effectful programming across heterogeneous computations
Jean Abou Samra , Martin Bodin and Yannick Zakowski
In Journées Francophones des Langages Applicatifs (JFLA'23)

Workshops

Games and Strategies using Coinductive Types
Peio Borthelle, Tom Hirschowitz, Guilhem Jaber and Yannick Zakowski
In International Conference on Types for Proofs and Programs (TYPES'23)

(Co)datatypes via W-setoids and M-setoids
Galaad Langlois, Damien Pous and Yannick Zakowski
In The Coq Workshop 2023

Thesis manuscripts

Verification of a Concurrent Garbage Collector
Yannick Zakowski
Doctoral Thesis, ENS Rennes, 2017

PhD students

01/09/21-10/22/24 Advisor to Emma Nardino
Co-advisor: Ludovic Henrio
Topic: "Active Objects based on Algebraic Effects"
Source of funding: *Allocation Specifique Normalien (ASN)*

01/10/21-12/03/25 Advisor to Peio Borthelle
Co-advisors: Tom Hirschowitz and Guilhem Jaber
Topic: "Operational Game Semantics in Type Theory"

01/09/21-10/22/24 Advisor to Nicolas Chappe
Co-advisor: Ludovic Henrio
Topic: "A Concurrency Model based on Monadic Interpreters:
            Executable semantics for a concurrent subset of LLVM IR"
Source of funding: *Allocation Specifique Normalien (ASN)*

Teaching duties

2024 *Computer Science Department Seminar: Organization and Hosting*
    Audience: Third Year of Bachelor at ENS Lyon.

2024 *Compilation and Analysis*
with Gabriel Radanne
    Audience: First year of Master at ENS Lyon.

2021-2022 *Program Verification with Coinduction and Proof Assistants*
with Damien Pous
    Audience: Second year of Master at ENS Lyon.

2021-2022 *Static Analyses for Optimizing Compilers*
with Christophe Alias and Laure Gonnord
    Audience: Second year of Master at ENS Lyon.

2021-2022 *Concours d'entrée à l'ENS, épreuve pratique d'algorithmique et programmation*
    Examinateur

Fundings

Participant to the ANR *OptiTrust*
    Principal investigator: Arthur Charguéraud

Participant to the ANR *RECIPROG*
    Principal investigator: Alexis Saurin

Service

Conference Organization

- Conference Chair for CPP 26-27

- Artifact Evaluation Chair for ECOOP 25-26

- Web chair for POPL 25-26

Committees

- Program committees (conferences): OOPSLA'25, JFLA'25, PPDP'24, JFLA'24, POPL'23, OOPSLA'23, ICFP'22, CPP'21, JFLA'21

- Program committee (workshops): PRISC'25, CoqWS'24, GALOP'24, CoqPL'24

- Artifact evaluation committee: ICFP'24, OOPSLA'23, ICFP'22

- Member of PhD jury (examiner): Alexandre Moine (2024), Paul Jeanmaire (2024)

Misc

- Popularization article hosted on the blog *Binaire* as part of the series "Il était une fois... Ma thèse".
  `https://www.lemonde.fr/blog/binaire/2018/01/23/il-etait-une-fois-ma-these-le-lave-vaisselle-de-la-memoire`

- Co-conception and co-hosting of a popularization demo at the IRISA, Decembre 2015 ("Journée portes ouvertes pour les 40 ans de l'IRISA")

- Conception and co-organisation of the first edition of the national seminar for french PhD students in computer science (2016).

- Student volunteer at the European Conference on Object-Oriented Programming 2015 (ECOOP'15) in Prague.

Education

2009-2014 Studies at the ENS Rennes.
Bachelor in mathematics (2009). Master in computer science (2013, ranked 3rd).

2013-2014 Ten months internship at the Aarhus University, in the Logics and Semantics group.
Supervisors: Lars Birkedal and Filip Sieczkowski
Topic: *"Toward a formalization in Coq of a parallelization theorem for an higher order concurrent language with general references"*

2013 Five months internship at IRISA, Rennes, in the Celtique team.
Supervisor: David Cachera
Topic: *"Generation of polynomial inequalities as invariants"*

2012 Three month internship in Sweden, at Chalmers University.
Supervisor: David Sands
Topic: *"Programming With Information Flow-Control: the Paragon language"*

2011 Two month internship at IRISA, Rennes, in the Celtique team.
Supervisor: David Cachera
Topic: *"Fast inference of polynomial invariants for imperative programs"*