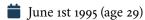
# Cas van der Rest



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#### **About Me**

I enjoy working at the intersection of research and industry, where I can apply my academic expertise to real-world challenges. My specialization lies in formal semantics and in modeling and reasoning about complex systems using dependent type theory. At the same time, I have a broad foundation in computer science and mathematics and a genuine passion for learning about technical subjects. I highly value a friendly, collaborative work environment and strongly believe in the importance of fostering positive and respectful relationships with coworkers and collaborators.

## **Employment History**

2024 – present **Formal Methods Engineer, Input Output Global.** 

Researched and developed formal semantics for smart contracts on the Midnight blockchain. Designed a novel approach for integrating the contract language's formal specification with its implementation, based on transpilation of Nanopass IRs to Agda.

2019 – 2024 Promovendus (Ph.D. Candidate), Delft University of Technology.

Learned to work independently as a scientific researcher, which includes designing and answering novel research questions, mechanizing results in Agda, and communicating results to the international scientific community through publishing or presenting at conferences.

2017 − 2019 ► Software Developer, BOLAS BV.

Front and back-end development of a web-application using C#/.NET, JavaScript, HTML, and CSS.

**2018-2019** ► Teaching Assistant, Utrecht University.

Responsible for grading assignments and supervising tutoring sessions.

Courses: Languages and Compilers, Software Testing and Verification, Imperative Programming

#### **Education**

July 2023 Scottish Programming Languages and Verification Summer School, University of St. Andrews.

Highlighted courses: Graded Types, Introduction to Session Types.

June 2022 • Oregon Programming Languages Summer School, University of Oregon on Types, Semantics, and Program Reasoning.

Highlighted courses: Introduction to Proof Theory, Abstract Machines and Classical Realizability, Algebra of Programming.

April 2021 • Midlands Graduate School, Virtual on the Foundations of Computing Science. Highlighted courses: *Category Theory, Type Theory.* 

**M.Sc. Computing Science, Utrecht University** in Software Technology. Graduated *cum laude*, GPA 8.5 (Dutch)/4.0 (US).

Thesis title: Generating Constrained Test Data using Datatype Generic Programming.

# **Education (continued)**

2013 − 2017 **B.Sc. Informatica (Computer Science), Utrecht University.** 

## **Skills**

Languages Dutch (native), English (fluent).

Programming Agda, Haskell, C#, web development.

Expertise Dependent Types, Semantics, Category Theory, Functional Programming.

Academic Proof assistants (Agda), writing and typesetting using LTEX, presenting, teaching.

## **Publications**

- van der Rest, C. and C. B. Poulsen, "Types and semantics for extensible data types," in *Programming Languages and Systems 21st Asian Symposium, APLAS 2023, Taipei, Taiwan, November 26-29, 2023, Proceedings*, ser. Lecture Notes in Computer Science, vol. 14405, Springer, 2023, pp. 46–66. DOI: 10.1007/978-981-99-8311-7\_3.
- C. B. Poulsen and **van der Rest, C.**, "Hefty algebras: Modular elaboration of higher-order algebraic effects," *Proc. ACM Program. Lang.*, vol. 7, no. POPL, pp. 1801–1831, 2023. ODI: 10.1145/3571255.
- van der Rest, C. and C. B. Poulsen, "Towards a language for defining reusable programming language components (project paper)," ser. Lecture Notes in Computer Science, vol. 13401, Springer, 2022, pp. 18–38. ODI: 10.1007/978-3-031-21314-4\_2.
- van der Rest, C., C. B. Poulsen, A. Rouvoet, E. Visser, and P. D. Mosses, "Intrinsically-typed definitional interpreters à la carte," *Proc. ACM Program. Lang.*, vol. 6, no. OOPSLA2, pp. 1903–1932, 2022.

  DOI: 10.1145/3563355.
- van der Rest, C. and W. Swierstra, "A completely unique account of enumeration," *Proc. ACM Program. Lang.*, vol. 6, no. ICFP, pp. 411–437, 2022. ODI: 10.1145/3547636.
- 6 C. B. Poulsen, **van der Rest, C.**, and T. Schrijvers, "Staged effects and handlers for modular languages with abstraction," in *Workshop on Partial Evaluation and Program Manipulation (PEPM)*, 2021.
- **van der Rest, C.**, W. Swierstra, and M. Chakravarty, "Generic enumerators," in *Workshop on Type-Driven Development (TYDE)*, 2019.

### **Conference Talks**

Nov. 27, 2023	"Types and Semantics for Extensible Data Types", 21st Asian Symposium on Programmgin
	Languages and Systems (APLAS), Taipei, Taiwan.

June 15, 2023 Types and Semantics for Extensible Data Types", 29th International Conference on Types for Proofs and Programs (TYPES), Valencia, Spain.

Dec. 10, 2022 • "Intrinsically-Typed Definitional Interpreters à la Carte", 36th International Conference on Object-Oriented Programming, Systems, Languages & Applications (OOPSLA), Auckland, New Zealand.

Sep. 12, 2022 Mac Completely Unique Account of Enumeration", 27th International Conference on Functional Programming (ICFP), Ljubljana, Slovenia.

March 18, 2022 Towards a Language for Defining Reusable Programming Language Components", 23rd International Symposium on Trends in Functional Programming (TFP), Virtual.

Aug 18, 2019 Generic Enumerators", Workshop on Type-Driven Development (TYDE), Berlin, Germany.