Cas van der Rest

June 1st 1995 (age 29)
casvdrest@gmail.com
casvdrest
casvdrest
http://casvanderrest.nl

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*.

2017 – 2019
- **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 LaTeX, presenting, teaching.

Publications

1. **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.
2. 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. DOI: 10.1145/3571255.
3. **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. DOI: 10.1007/978-3-031-21314-4_2.
4. **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.
5. **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. DOI: 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.
7. **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	▶ "A 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*.