

# Devora Chait-Roth

(347) 957-0582 | [dc4451@nyu.edu](mailto:dc4451@nyu.edu) | [www.cs.nyu.edu/~dc4451](http://www.cs.nyu.edu/~dc4451)

## EDUCATION

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**New York University**, PhD in Computer Science  
*Advisor: Thomas Wies*

Aug 2020 - Present  
*Overall GPA 3.828*

**Macaulay Honors College at Queens College**, BA in Mathematics  
*Concentration in Computer Science*

Aug 2016 - May 2020  
*Overall GPA 4.0*

## RESEARCH INTERESTS

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Formal methods, automated reasoning, verification, logic, programming languages

## RESEARCH EXPERIENCE

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**New York University and Nokia Bell Labs – Consistent updates to distributed systems**

**December 2023 –**

*With Thomas Wies and Kedar Namjoshi*

Developing the first formal foundations for proving consistency of updates to distributed systems. Designing algorithms for resource-efficient, provably consistent updates for distributed systems, guided by the formal framework.

**Nokia Bell Labs – Constructing trustworthy smart contracts**

**March 2023 – September 2024**

*With Kedar Namjoshi*

Developed Asp, a language designed for building trustworthy smart contracts. Asp achieves this through a state machine structure and built-in abstract types that guarantee proper behavior. Asp's defensive compiler to Solidity enforces language semantics, and user-supplied proofs establish functional correctness. Asp is implemented in OCaml and leverages the deductive verification tool Viper for verification of safety and liveness proofs.

**New York University - Refinement proofs for probabilistic proofs**

**June 2021 – November 2022**

*With Thomas Wies and Michael Walfish*

Developed Distiller, the first framework for proving soundness of frontend transformations in probabilistic proofs. Distiller relies on proving refinement between the program's original implementation, transformation, and formal specification. Distiller enables safety guarantees for outsourced computing and zero-knowledge proofs. Proofs for benchmarks were mechanized in Viper.

## PUBLICATIONS

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**Devora Chait-Roth** and Kedar S. Namjoshi, "Constructing Trustworthy Smart Contracts." To appear in *26th International Conference on Verification, Model Checking, and Abstract Interpretation (VMCAI)*, 2025.

Kunming Jiang, **Devora Chait-Roth**, Zachary DeStefano, Michael Walfish, and Thomas Wies, "Less is more: refinement proofs for probabilistic proofs." *Proceedings of IEEE Symposium on Security and Privacy (IEEE S&P)*, 2023.

**Devora Chait-Roth**, Alisa Cui, Zachary Stier. "A Taxonomy of Crystallographic Sphere Packings." *Journal of Number Theory*, Vol. 207, Feb 2020, pp. 196-246.

## HONORS AND AWARDS

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- **Henry M. MacCracken Fellowship**: New York University, 2020-2026
- **Dean's Doctoral Fellowship**: New York University, 2020-2026
- **Intern Research Competition, Third Place**: Nokia Bell Labs, 2024
- **Intern Research Competition, First Place**: Nokia Bell Labs, 2023
- **Barry Goldwater Scholarship**, for research in mathematics: U.S. national merit scholarship, 2019
- **Thomas A. Budne Memorial Award**, for excellence in mathematics: Queens College, 2019
- **University Scholar**, full tuition merit scholarship: Macaulay Honors College at Queens College, 2016-2020

## SKILLS

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- OCaml, C++, Python
- Program verification: Viper
- Some familiarity with Lean, Coq, Prolog