

# Joshua Cohen

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GitHub: [github.com/joscoh](https://github.com/joscoh)

## RESEARCH INTERESTS

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Formal verification, algorithms, proof assistants, functional programming

## EDUCATION

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<b>Princeton University</b>	Princeton, NJ
• PhD in Computer Science, Advisor: Andrew Appel	2020-Current
<b>University of Pennsylvania</b>	Philadelphia, PA
• MSE in Computer Science, GPA: 4.0/4.0	2018-2020
• BA in Mathematics and Computer Science ( <i>summa cum laude</i> ), GPA: 3.98/4.0	2016-2020

## PUBLICATIONS

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- **Joshua M. Cohen** and Philip Johnson-Freyd. “A Formalization of Core Why3 in Coq”. In: *POPL 2024: 51st ACM SIGPLAN Symposium on Principles of Programming Languages*. 2024. To appear
- **Joshua M. Cohen** and Andrew W. Appel. “Specifying and Verifying a Real-World Packet Error-Correction System”. In: *VSTTE 2023: 15th International Conference on Verified Software: Theories, Tools, and Experiments*. 2023. To appear
- **Joshua M. Cohen**, Qinshi Wang, and Andrew W. Appel. “Verified Erasure Correction in Coq with MathComp and VST”. in: *CAV 2022: 34th International Conference on Computer-Aided Verification*. 2022
- Joachim Breitner, Antal Spector-Zabusky, Yao Li, Christine Rizkallah, John Wiegley, **Joshua Cohen**, and Stephanie Weirich. “Ready, Set, Verify! Applying hs-to-coq to Real-World Haskell Code”. In: *Journal of Functional Programming* 31 (2021)

## TALKS

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- *A Formalization of Why3 in Coq*. New Jersey Programming Languages and Systems Seminar (NJPLS). May 2023.
- *Verified Erasure Correction in Coq with MathComp and VST*. New Jersey Programming Languages and Systems Seminar (NJPLS). May 2022.

## EMPLOYMENT

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<b>Sandia National Labs - Formal Methods R&amp;D Intern</b>	Summer 2022 - Present
• Working on formal semantics for the Why3 intermediate verification language.	
<b>AWS - Applied Scientist Intern</b>	Summer 2021
• Used Dafny to prove correctness theorems about the IAM policy evaluator.	
<b>AWS - SDE Intern</b>	Summer 2019
• Developed internal tools for AWS Key Management Service HSM team.	
• Used several cryptography libraries to interface with Yubikeys.	

## **KPMG - Data & Analytics Intern**

Summer 2018

- Developed Microsoft Office add-in for automated document generation using Javascript, HTML, and Office-JS API.

## **TEACHING**

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### **Teaching Assistant - Princeton University**

- Programming Languages (COS 510) Spring 2023
- Theory of Algorithms (COS 423) Fall 2022

### **Teaching Assistant - University of Pennsylvania**

- Introduction to Algorithms (CIS 320) Fall 2019, Spring 2020
- Programming Languages and Techniques I (CIS 120) Spring 2018, Fall 2018, Spring 2019

## **HONORS AND AWARDS**

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**Gordon Wu Fellowship in Engineering - Princeton University**

**Benjamin Franklin Scholar - University of Pennsylvania**

**IEEE Eta Kappa Nu Honor Society Member - University of Pennsylvania**

## **SKILLS**

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**Verification** - Coq, VST, Dafny, Verifast, Liquid Haskell

**Programming** - C, Java, Python, Haskell, OCaml, LaTeX