John C. Kolesar

AKW 211, 51 Prospect Street, New Haven, CT 06511

301-503-5299 (cell) • ✉ jkolesar98@gmail.com, john.kolesar@yale.edu

johnckolesar.github.io, www.linkedin.com/in/john-kolesar-a1348b24a

Education

Yale University	**New Haven, Connecticut**
Ph.D., Computer Science	*2020–2026 (anticipated)*

Advisor: Ruzica Piskac

Earned M.S. en route to Ph.D. in 2022

Cornell University	**Ithaca, New York**
Bachelor of Arts with Distinction in All Subjects	*2016–2020*

Majors:
- Mathematics (Magna cum Laude, Computer Science concentration)
- Classics (Latin concentration)

Minors:
- Computer Science
- Philosophy

Cumulative Grade Point Average: 3.97

Computer Science GPA: 4.02

Honors

Phi Beta Kappa	
Cornell University College of Arts & Sciences	*2020*

Nathan Hale Associates Fellow	
Yale Graduate School of Arts & Sciences	*2021*

Arts & Sciences Dean's List	
Cornell University	*All available semesters*

Graduate Course Work Performance

Grade of H (maximum grade for Yale GSAS) in all graded graduate courses

Research Interests

- Formal Methods
- Program Verification
- Cryptography
- Zero-Knowledge Proofs
- Symbolic Execution
- Software-Defined Networking
- Automatic Program Repair
- Competitive Programming
- Regular Expressions and KAT

Conference Publications

- John Kolesar, Shan Ali, Timos Antonopoulos, Ruzica Piskac. **Coinductive Proofs of Regular Expression Equivalence in Zero Knowledge.** Under Submission.
- John Kolesar, Tancrède Lepoint, Martin Schäf, Willem Visser. **Safe Validation of Pricing Agreements.** *ICSE*, 2025.
- Daniel Luick, John Kolesar, Timos Antonopoulos, William R. Harris, James Parker, Ruzica Piskac, Eran Tromer, Xiao Wang, Ning Luo. **ZKSMT: A VM for Proving SMT Theorems in Zero Knowledge.** *USENIX Security*, 2024.
- John C. Kolesar, Ruzica Piskac, William T. Hallahan. **Checking Equivalence in a Non-strict Language.** *OOPSLA*, 2022.
- Jialu Zhang, De Li, John C. Kolesar, Hanyuan Shi, Ruzica Piskac. **Automated Feedback Generation for Competition-Level Code.** *ASE*, 2022.

Journal Publications

- John C. Kolesar, Ruzica Piskac, William T. Hallahan. **Checking Equivalence in a Non-strict Language.** *Journal of Functional Programming*, 2025.

Talks

ZK Proofs for SMT Theorems and Regular Expression Equivalence
Carnegie Mellon University, CyLab Crypto Seminar — *November 2024*

Coinductive Proofs of Regular Expression Equivalence in Zero Knowledge
FMCAD 2024 Student Forum — *October 2024*

ZKSMT: A VM for Proving SMT Theorems in Zero Knowledge
New York University, NJPLS — *May 2024*

Poster Presentations

Coinductive Proofs of Regular Expression Equivalence in Zero Knowledge
FMCAD 2024 Student Forum — *October 2024*

Checking Equivalence in a Non-strict Language
Yale University — *October 2023*

Industry Work Experience

Amazon Web Services
Applied Scientist Intern, New York City — *Summer 2024, Summer 2025*
Manager: Martin Schäf

Microsoft One Engineering System
Research Intern, Remote — *Summer 2022*
Supervisor: Josh Becker
Mentor: Grant Holliday

Aretec Inc.
Big Data Software Application Developer — *Summer 2018, Summer 2019*
Contractor for U.S. Securities and Exchange Commission
New York City (2018)
Washington, D.C. (2019)

Mentoring Experience

Zero-Knowledge Regular Expression Equivalence **Yale University**
Shan Ali *Summer 2024*

Teaching Experience

Graduate Teaching Fellow at Yale University...

CPSC 415/515: Law and Large Language Models
Taught by Ruzica Piskac and Scott Shapiro *Spring 2025*

CPSC 458/558: Automated Decision Systems
Taught by Stephen Slade *Spring 2024*

CPSC 323: Introduction to Systems Programming and Computer Organization
Taught by James Glenn and Jay Lim *Fall 2023*

CPSC 484/584: Introduction to Human-Computer Interaction
Taught by Marynel Vázquez *Spring 2023*

CPSC 435/535: Building an Internet Router
Taught by Robert Soule *Fall 2022*

CPSC 433/533: Computer Networks
Taught by Anurag Khandelwal *Spring 2022*

CPSC 323: Introduction to Systems Programming and Computer Organization
Taught by Ruzica Piskac and Rob Brunstad *Fall 2021*

Undergraduate Teaching Assistant at Cornell University......................................

CS 3110: Data Structures and Functional Programming
Taught by Nate Foster *Spring 2020*

CS 4820: Introduction to Analysis of Algorithms
Taught by Eva Tardos *Fall 2019*

CS 3110: Data Structures and Functional Programming
Taught by Michael Clarkson *Fall 2018*

CS 2112: Honors Object-Oriented Design and Data Structures
Taught by Dexter Kozen *Fall 2017*

Other Work, Research, and Volunteering Experience

Cornell University **Ithaca, New York**
Computer Science Research *Fall 2019, Spring 2020*
Research Advisor: Nate Foster
Subject: Software-Defined Networking with P4

Tenley Achievement Program **Washington, D.C.**
Office Manager *Summer 2017*

Yale University Computer Science Department **New Haven, Connecticut**
Graduate Student Advisory Committee Member *2023–2024 Academic Year*

Yale University Computer Science Department **New Haven, Connecticut**
New Ph.D. Student Mentor *2023–2024, 2024–2025 Academic Years*

National University of Colombia
Web Chair for LPAR 2023

Manizales, Colombia (remote)
June 2023

Squash Haven
Volunteer Tutor (Computer Science, Mathematics)

New Haven, Connecticut
Spring 2023, Fall 2023

Yale University Computer Science Department
Website Manager for Formal Methods Meetup 2023

New Haven, Connecticut
October 2023

Yale University Computer Science Department
Ph.D. Student Buddy for Admitted Student Day

New Haven, Connecticut
Spring 2022

Skills

- Proficiency in Java, C, C++, OCaml, Q, Haskell, Python, JavaScript, TypeScript
- Experience with Dafny, Coq, Standard ML, C#, Kusto, Langium
- Experience with SMT solvers, Excel, LaTeX, Unity, Blender, VirtualBox, Docker