

# 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**

*Ph.D., Computer Science*

Advisor: Ruzica Piskac

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

### **New Haven, Connecticut**

2020–2026 (*anticipated*)

### **Cornell University**

*Bachelor of Arts with Distinction in All Subjects*

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

### **Ithaca, New York**

2016–2020

## 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

---

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

## Conference Publications

---

- Jialu Zhang, Jialiang Gu, Wangmeiyu Zhang, José Pablo Cambronero, John Kolesar, Ruzica Piskac, Daming Li, Hanyuan Shi. **A Systematic Study of Time Limit Exceeded Errors in Online Programming Assignments.** Under Submission.
- John Kolesar, Martin Schäf, Robin Salkeld, Remy Willems, Willem Visser. **Enforceable Explainability Properties for Pricing Models.** Under Submission.
- John C. Kolesar, Shan Ali, Timos Antonopoulos, Ruzica Piskac. **Coinductive Proofs of Regular Expression Equivalence in Zero Knowledge.** *OOPSLA*, 2025.
- 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.....

<b>ZK Proofs for SMT Theorems and Regular Expression Equivalence</b> <i>Carnegie Mellon University, CyLab Crypto Seminar</i>	<i>November 2024</i>
<b>Coinductive Proofs of Regular Expression Equivalence in Zero Knowledge</b> <i>FMCAD 2024 Student Forum</i>	<i>October 2024</i>
<b>ZKSMT: A VM for Proving SMT Theorems in Zero Knowledge</b> <i>New York University, NJPLS</i>	<i>May 2024</i>

### Poster Presentations.....

<b>Coinductive Proofs of Regular Expression Equivalence in Zero Knowledge</b> <i>FMCAD 2024 Student Forum</i>	<i>October 2024</i>
<b>Checking Equivalence in a Non-strict Language</b> <i>Yale University</i>	<i>October 2023</i>

## 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*  
Contractor for U.S. Securities and Exchange Commission  
New York City (2018)  
Washington, D.C. (2019)

*Summer 2018, Summer 2019*

## **Mentoring Experience**

---

**Zero-Knowledge Regular Expression Equivalence**  
*Shan Ali*

**Yale University**  
*Summer 2024*

## **Teaching Experience**

---

<b>Graduate Teaching Fellow at Yale University</b>	
<b>CPSC 415/515: Law and Large Language Models</b>	
<i>Taught by Ruzica Piskac and Scott Shapiro</i>	<i>Spring 2025</i>
<b>CPSC 458/558: Automated Decision Systems</b>	
<i>Taught by Stephen Slade</i>	<i>Spring 2024</i>
<b>CPSC 323: Introduction to Systems Programming and Computer Organization</b>	
<i>Taught by James Glenn and Jay Lim</i>	<i>Fall 2023</i>
<b>CPSC 484/584: Introduction to Human-Computer Interaction</b>	
<i>Taught by Marynel Vázquez</i>	<i>Spring 2023</i>
<b>CPSC 435/535: Building an Internet Router</b>	
<i>Taught by Robert Soule</i>	<i>Fall 2022</i>
<b>CPSC 433/533: Computer Networks</b>	
<i>Taught by Anurag Khandelwal</i>	<i>Spring 2022</i>
<b>CPSC 323: Introduction to Systems Programming and Computer Organization</b>	
<i>Taught by Ruzica Piskac and Rob Brunstad</i>	<i>Fall 2021</i>
<b>Undergraduate Teaching Assistant at Cornell University</b>	
<b>CS 3110: Data Structures and Functional Programming</b>	
<i>Taught by Nate Foster</i>	<i>Spring 2020</i>
<b>CS 4820: Introduction to Analysis of Algorithms</b>	
<i>Taught by Eva Tardos</i>	<i>Fall 2019</i>
<b>CS 3110: Data Structures and Functional Programming</b>	
<i>Taught by Michael Clarkson</i>	<i>Fall 2018</i>
<b>CS 2112: Honors Object-Oriented Design and Data Structures</b>	
<i>Taught by Dexter Kozen</i>	<i>Fall 2017</i>

## **Other Work, Research, and Volunteering Experience**

---

**Cornell University**  
*Computer Science Research*  
Research Advisor: Nate Foster  
Subject: Software-Defined Networking with P4

**Ithaca, New York**  
*Fall 2019, Spring 2020*

**Tenley Achievement Program**  
*Office Manager*

**Washington, D.C.**  
*Summer 2017*

**Yale University Computer Science Department**  
*Graduate Student Advisory Committee Member*

**Yale University Computer Science Department**  
*New Ph.D. Student Mentor*

**National University of Colombia**  
*Web Chair for LPAR 2023*

**Squash Haven**  
*Volunteer Tutor (Computer Science, Mathematics)*

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

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

**New Haven, Connecticut**  
*2023–2024 Academic Year*

**New Haven, Connecticut**  
*2023–2024, 2024–2025 Academic Years*

**Manizales, Colombia (remote)**  
*June 2023*

**New Haven, Connecticut**  
*Spring 2023, Fall 2023*

**New Haven, Connecticut**  
*October 2023*

**New Haven, Connecticut**  
*Spring 2022*

## Skills

---

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