

JORDAN SCHMERGE

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POSITIONS

WEB3 SYSTEMS RESEARCH INTERN, NOKIA BELL LABS (SUMMER 2025)

Full time intern doing research at the intersection of privacy and blockchains. My work includes both theory and implementation, literature reviews, and dissemination through presentations. My final presentation was awarded a 3rd place award among all internship projects from that year. Future papers/patents are anticipated. Further details withheld for confidentiality until cleared internally.

NUMERICAL HARDWARE ENGINEER INTERN, INTEL (JANUARY 2023 – AUGUST 2023)

Full time intern working in a highly interdisciplinary team. Scope ranged from numerical hardware and optimization to high level graphics algorithms, focusing on using the ACL2 theorem prover to verify a highly optimized multiplier; as well as creating a C++ tool used internally to optimize RTL while formally verifying the changes. This work produced the two patents.

TEACHING ASSISTANT, YALE UNIVERSITY (FALL 2024 – PRESENT)

CPSC-202: Mathematical Foundations of CS – many CS students first exposure to the math/theory side of CS, topics include basic logic, proof techniques, graphs, combinatorics, probability, and more (Fall 2024 and Fall 2025)

CPSC-415: Law and LLMs – co-taught with Yale Law school, exploring how automated reasoning can be used in legal field, how and where LLMs can (and can't yet) assist, and why legal applications pose unique challenges for reasoning (Spring 2025, Spring 2026)

COURSE INSTRUCTOR, COLORADO SCHOOL OF MINES (AUGUST 2018 – MAY 2020)

CSCI-101: Intro to Computer Science - focused on first exposure to variety of major CS topics including basic algorithms, binary numbers, network and OS principals, and more (Fall 2018, Spring 2019, and Fall 2019)

CSCI-341: Computer Organization - focused on assembly, hardware datapaths, and floating point (Fall 2020)

I also did outreach for CS@Mines at middle and high schools through activities and discussions with students

VARIOUS, HOLIDAY LANES (SEPTEMBER 2015 – JUNE 2022)

I took initiative to automate a large portion of a tournament with a Python script that saved time and made fewer errors. I also supervised the bowling center from the front counter, then was responsible for maintenance and repairs working as the mechanic, and I assisted with administrative tasks for leagues and tournaments.

EDUCATION

PHD STUDENT IN ROSE FORMAL METHODS GROUP (RUZICA PISKAC), YALE UNIVERSITY (AUGUST 2023 TO PRESENT)

PHD student working in formal methods with experience in formal verification and systems. My current research focuses on privacy-preserving reasoning at the intersection of cryptography and formal methods, but I have experience and interest high performance computing, compilers, systems, hardware, and the intersection of Math and AI

GRADUATE WORK, COLORADO SCHOOL OF MINES (JANUARY 2019 TO JUNE 2022)

Experience in asking research questions, finding tasks and deliverables, reading research papers, teamwork, technical communication, and peer review of others' work. Also completed the Tenth and Eleventh Summer Schools on Formal Techniques with Shankar Natarajan of SRI (May 2021 and June 2022)

B.S. AND M.S., COLORADO SCHOOL OF MINES (DECEMBER 2016, DECEMBER 2018)

Graduated Cum Laude with CS degree and overall 3.57 GPA (breadth of courses in CS, Physics, and Math)

Grad degree with overall 4.0 GPA, implemented custom CUDA code to investigate software prefetching on GPUs

SKILLS/VALUES

Experience from assembly to C++ to Python, and with ACL2, COQ, and LEAN theorem provers
Developing expertise in formal methods and verification and their applications across CS disciplines
Growth mindset to continually learn, collaborate, and help/be helped by others
Strong prioritization of presentations and science communication, including Yale “Science in the News” presentation

PUBLICATIONS

Jordan Schmerge*, Raoul van Doren, Duc-Hiep Chu, Timos Antonopoulos, Mariana Raykova, Ruzica Piskac, Multi-Party Privacy-Preserving Compliance Checking with Conflict Localization. Under Submission.

McClurg, J., Claver, M., Garner, J., Vossen, J., **Schmerge, J.**, & Belviranli, M. (2022). Optimizing regular expressions via rewrite-guided synthesis. *PACT*, 426–438. ACM.

Schmerge, J., Vossen, J., & McClurg J. (2022). Toward a Unified Framework for Program Optimization, Bug-Finding, and Repair. EGRAPHS@PLDI (*Extended abstract, talk given, not officially published*)

Schmerge, J., Mawhirter, D., Holmes, C., McClurg, J., & Wu, B. (2021). ELIXR: Eliminating Computation Redundancy in CNN-Based Video Processing. *RSDHA@SC*, 34–44. IEEE.

PATENTS

- AUTOMATIC CODE GENERATION OF OPTIMIZED RTL VIA REDUNDANT CODE REMOVAL
- AUTOMATIC BUG FIXING OF RTL VIA WORD LEVEL REWRITING AND FORMAL VERIFICATION