

Jake Ginesin

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in jakeginesin • US Citizen

Education

Northeastern University **Fall 2021 – Spring 2025 (Anticipated)**
BS in Mathematics, BS in Computer Science (Double Major)

(Full list of coursework at <https://jakegines.in/coursework>.)

Programming experience.....

Python, C, Rust, Go, Haskell, Linux (Arch on BSPWM); Coq, Lean, TLA+, Spin, Tamarin, Verifpal

Selected work experience

Research.....

Harvard University: LLM Research Assistant *Summer 2024 - present*
Verifiable code generation. Reference: Nada Amin.

Northeastern University: Formal Methods Research Assistant *Spring 2022 - present*
Formally analyzing the security of distributed protocols (SCTP, Matrix). Automated attack discovery, threat model formalization. Reference: Cristina Nita-Rotaru.

Oxford University: Formal Methods Visiting Researcher *Summer 2023*
Implemented a custom model checking library from scratch, developed various SMT & LP-based heuristics to improve automated reasoning efficiency. Reference: Christoph Haase.

University of Southern California: Cybersecurity Research Assistant *Summer 2022*
Wrangled 26 billion DNS traces from a DNS root server and measured resolver behaviors. Reference: Jelena Mirkovic.

Cybersecurity.....

Trail of Bits: Verification Intern *Winter 2023-2024*
Formally analyzed and verified cryptographic protocols for secure distributed storage and message exchange proposed by Meta and Dropbox.

Northeastern University: Cybersecurity Teaching Assistant *Spring 2023, Summer 2024*
Teaching Assistant for Foundations of Cybersecurity (CY2550). Held office hours, graded coursework, provided student feedback, and aided in future assignment design.

Publications and preprints

- A Formal Analysis of SCTP: Attack Synthesis and Patch Verification.
Jacob Ginesin, Max von Hippel, Evan Defloor, Cristina Nita-Rotaru, Michael Tüxen. [arXiv:2403.05663](https://arxiv.org/abs/2403.05663).
- Understanding DNS Query Composition at B-Root.
Jacob Ginesin, Jelena Mirkovic. [arXiv:2308.07966](https://arxiv.org/abs/2308.07966).
- Can It Edit? Evaluating the Ability of Large Language Models to Follow Code Editing Instructions.
Federico Cassano, Luisa Li, Akul Sethi, Noah Shinn, Abby Brennan-Jones, **Jacob Ginesin**, Edward Berman, George Chakhashvili, Anton Lozhkov, Carolyn Jane Anderson, Arjun Guha. [arXiv:2312.12450](https://arxiv.org/abs/2312.12450).
- SafeLLVM: LLVM Without The ROP Gadgets!.
Federico Cassano, Charles Bershatsky, **Jacob Ginesin**, Sasha Bashenko. [arXiv:2305.06092](https://arxiv.org/abs/2305.06092).

Last updated June 15, 2024