

HUMAM ALHUSAINI

I'm a undergraduate who is interested in bug hunting and verification through static and dynamic analysis. I bring experience with machine code analysis, penetration testing, functional programming, interactive theorem provers, SMT solvers, and technical writing.

CONTACT

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SKILLS

Programming Languages

- Ocaml
- Rocq
- C/C++
- Go
- Python
- ARM
- Java
- Bash
- SMT-LIB
- Latex

Operating Systems

- Linux
(Fedora, Arch, Gentoo, Ubuntu Server)
- Qubes OS

Tools

- Web Proxies
(ZAPProxy, Burp Suite)
- Web Fuzzers
(ffuf, gobuster)
- SMT Solvers
(Z3, CVC5)
- Ghidra
- Docker
- Curl
- Tor
- I2P

Languages

- English
- Arabic

CONFERENCES

- PLDI 2026 - Boulder, Colorado
- FMCAD 2026, VSTTE 2026 - Graz, Austria

STUDENT ORGANIZATIONS

- Cyber Security Group at UTDallas

EDUCATION

- 📅 08/2026 - Present
- 📍 University of Texas at Dallas
- Bachelors of Computer Science
- GPA: 3.2

WORK HISTORY

- 📅 July 2025 - Present
- 📍 Software Languages Security Lab
- Research Assistant

- Analyzed machine code using Picinæ, an analysis framework written in Rocq
- Provided bottom-up formal guarantees for common bit-arithmetic algorithms using Picinæ; see **Formal Proofs of Bit Hacks in Machine Code**
- Pioneered a plan to integrate advanced automation into Picinæ through SMT solvers; see **Towards Automated Reasoning About Machine Code Using SMTCoq**

PUBLICATIONS

Formal Proofs of Bit Hacks in Machine Code

- 👤 Humam Alhusaini
- 📅 2026
- 📄 PLDI SRC
- 🔗 Link

Towards Automated Reasoning About Machine Code Using SMTCoq

- 👤 Humam Alhusaini
- 📅 2026
- 📄 FMCAD Student Forum
- 🔗 Link

SELECTED PROJECTS

- Lang** - An interpreted language written in Ocaml from scratch. It is semantically similar to the IMP language in *Logical Foundations*
- GallinaDB** - A naive version of SQLite written in Rocq, extracted to Ocaml
- SMT Rocq** - A re-architecting of SMTCoq for modern automation of interactive theorem proving

BOOKS AND COURSES

- Logical Foundations** - Introduced me to the basics of interactive theorem proving in Rocq, an industrial strength proof assistant
- Programming Language Foundations** - Taught me about program verification and type systems in Rocq, culminating into studying the simply typed lambda calculus
- Separation Logic Foundations** - Introduced me to the fundamentals of separation logic in Rocq and using it to verifying programs
- Concrete Semantics** - Taught me important PL concepts like abstract interpretation in Isabelle, an interactive theroem prover
- Verification for Dummies** - Introduced me to SMT-based model checking
- Hack the Box Web Penetration Tester Path** - Learned the basics of web penetration testing