

# Chandler Camarena

## Hardware Security Researcher

Fulbright Scholar · TS/SCI (lapsed) · CLS Russian · Phoenix, AZ

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## Education

### Eotvos Lorand University (ELTE)

*M.Sc. Computer Science · Fulbright Scholar 2024-2025 · Advisor: Prof. Zoltan Porkolab*

Expected Jul 2026

Budapest, Hungary

- Thesis: *Detecting and Explaining Cryptographic Misuse in C/C++ via LLVM/Clang* – formalized trust-boundary leakage as confidentiality invariant  $I(P)$  over representation semantics  $R(P)$ ; built evidence lattice (E0-E3) and Clang-Tidy checker; 0 false positives on real-world findings.

### Arizona State University

*B.S. Computer Science (Cybersecurity Concentration) · GPA 3.81/4.00 · Summa Cum Laude*

May 2024

Tempe, AZ

## Research

### ISA-Silent Channels – Microarchitectural Observability Gaps in RISC-V

2026 – present

*Independent Research · Target venue: HASP @ ISCA/MICRO*

- Identifies ISA underspecification as a formal property absent from the RISC-V Sail model: architecturally equivalent instruction sequences that are microarchitecturally timing-distinguishable yet uncaptured by any ISA predicate. Characterizes at least three such classes using notation consistent with Trippel's axiomatic hardware-software contracts framework and demonstrates each with cache-timing tooling.

### M.Sc. Thesis – Detecting and Explaining Cryptographic Misuse in C/C++ via LLVM/Clang

2025 – 2026

*ELTE Budapest · [github.com/ChandlerCamarena/clang-padding-leakage-checker](https://github.com/ChandlerCamarena/clang-padding-leakage-checker)*

- Formal contribution:  $\text{SemanticMisconfig}(P) \text{ iff } \text{WellFormed}(P) \text{ and not } \text{UB}(P) \text{ and not } \text{I}(P)$  – syntactically correct, UB-free programs violating system-level confidentiality through ABI representation semantics. Implemented Clang-Tidy checker with evidence lattice (E0-E3); evaluated on 4 real-world C libraries with 0 false positives.

## Experience

### Arizona State University – Senior Capstone

Aug 2023 – May 2024

*Capstone Researcher – Hardware-Software Security · Sponsor: General Dynamics Mission Systems*

Tempe, AZ

- Built a bootloader-stage device-tree hardening mechanism for a secure mobile platform; reduced hardware attack surface before userspace initialization across cross-compilation toolchains, U-Boot, and embedded Linux.

### Arizona Air National Guard – 161st Air Refueling Wing

Oct 2018 – Oct 2024

*Information Systems Security Officer (ISSO) · TS/SCI · Senior Airman*

Phoenix, AZ

- Executed NIST 800-53 controls, ATO packages, POA&M management, and incident response for mission-critical operational systems; TEMPEST enforcement per AFMANs; COMSEC management including KMI operations and cryptographic material accountability.

## Awards & Fellowships

**Fulbright U.S. Student Scholar** – U.S. Department of State

2024-2025

**Critical Language Scholarship (CLS) – Russian** – U.S. Department of State

2023

**Summa Cum Laude, GPA 3.81/4.00** – Arizona State University

2024

## Skills

**Languages:** C, C++, Python

**Compiler & IR:** LLVM, Clang, Clang-Tidy, CodeChecker, static program analysis, AST-level layout reasoning

**Hardware & Architecture:** RISC-V ISA (Sail formal model), x86-64 SysV ABI, cache timing side channels, microarchitectural observability, speculative execution

**Formal Methods:** Security invariant design, evidence lattice construction, trust-boundary modeling, information flow theory

**Systems & Security:** Linux, cross-compilation, embedded Linux, bootloader security, NIST 800-53, COMSEC/KMI, TEMPEST

**Spoken Languages:** English (native), Russian (CLS – professional working proficiency)