András Gémes

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Summary

Compiler engineer specializing in reverse engineering with 7 years of cybersecurity experience. Hands-on experience in binary analysis, reverse engineering and malware analysis (e.g., ransomware and botnets). Certified in Sec+, CASP+/SecX, CEH, IMBT, PMAT and others. Looking to apply my expertise as a security engineer, reverse engineer and malware analyst.

Work experience

Compiler Engineer @ *HighTec EDV-Systeme GmbH - Budapest, Hungary* **Feb 2023 – Present**

- Obfuscating the HighTec Rust toolchain binaries against reverse engineering
- Representing HighTec as a member of the LLVM security group
- Implementing Rust and assembly tests for the HighTec Rust compiler

Application Security Engineer @ *Knorr-Bremse - Budapest, Hungary* **May 2018 – Jan 2023**

- Implemented and evaluated static application security testing across C codebases
- Resolved vulnerabilities discovered through AFL++ fuzzing
- Developed and hardened CAN communication, memory management and RTOS software modules

Technical skills

Programming languages: C, C++, Rust, Go, Python 3, Assembly (ARM64/AArch64, AMD64/x86-64), Bash
Reverse engineering (static): Ghidra, IDA, Binwalk, Joern, capa, YARA, DiE, llvm-readelf, llvm-objdump
Reverse engineering (dynamic): GDB, LLDB, QEMU, strace, eBPF, VirtualBox, Qiling, Frida, x64dbg, Sysinternals
Vulnerability research: checksec, ROPgadget, AFL++, ASan, MSan, TSan, UBSan
Network analysis and protocols: Wireshark, Suricata, Zeek, FakeNet-NG, INetSim, TCP, UDP, HTTP, HTTPS, DNS
Platforms and DevOps tools: Linux (Fedora, Ubuntu), macOS, Windows, Git, Docker, GitHub Actions, Jenkins
Embedded systems and protocols: STM32, ESP32, Wi-Fi, CAN, SPI, UART, I2C

Certifications

CompTIA Security+, CompTIA CASP+/SecurityX, EC-Council CEH, Invoke RE IMBT, TCM Security PMAT and others.

Open source contributions

- ghidra: contributing bug reports and patches to Ghidra, focusing on the BSim, Debugger and FunctionID features
- phantom-pass: implementing custom LLVM-based obfuscator pass plugins
- rust-arm64: writing a Rust book (*From Rust to assembly: ARM64 code generation patterns*)
- joern: working on improved binary analysis capabilities through Ghidra integration
- shadow-shell: developing a cyber lab for shellcode analysis, using Assembly and C

Education

MSc in Mechatronics Engineering **Feb 2016 – June 2018**

Budapest University of Technology and Economics - Budapest, Hungary

BSc in Mechatronics Engineering **Sept 2012 – Jan 2016**

University of Pannonia - Veszprém, Hungary

Continuous education

Currently I am actively learning on TryHackMe, reading Blue Fox: Arm Assembly and managing my homelab.