

Alejandro S. Mera

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EDUCATION

Northeastern University, Boston, MA

PhD in Cybersecurity

Aug. 2022

Northeastern University, Boston, MA

Master of Science in Information Assurance

Dec. 2016

The University of the Armed Forces (ESPE), Sangolquí, Ecuador

Master's in management and Telecommunication Networks

Jan. 2014

Army Polytechnic School (ESPE), Sangolquí, Ecuador

Bachelor of Science in Electrical Engineering

Mar. 2007

TECHNICAL SKILLS

Languages: Python, C++/C, Visual Basic .Net/C#, bash, HTML, PL-SQL
Embedded Arch.: Cortex-M, RISC-V, Xtensa, PIC, AVR.
Operating systems: Linux, Windows, Embedded: FreeRTOS, Mbed, and ChibiOS
Databases: Oracle 11g, SQL server, MySQL/MariaDB
Software: Cube IDE (STM32), MPLAB-X, ESP32-IDF
Tools: Ghidra, GDB, AFL, QEMU, Wireshark, Nmap, Metasploit, Nessus/Openvas,
Certifications: Certified Ethical Hacker (CEH)

RESEARCH

Northeastern University, Boston, MA

Aug. 2017 – Present

Research Assistant

- Designed DMA-enabled compartmentalization architectures for firmware of deeply embedded devices.
 - Designed and implemented scalable and hardware-independent firmware testing methods based on automatic emulation of peripheral-processor interfaces and DMA input channels.
 - Studied and systematized attacks on industrial control systems, and formal verification-based defenses.
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WORK EXPERIENCE

Microsoft

Jun. 2020 – Aug. 2020

Research Intern

- Designed and implemented full-system and semantic-aware fuzz testing tools for the Azure Sphere OS.
- Researched new methods for multi-dimensional fuzzing of embedded firmware of IoT devices.

TCS Industrial, Quito, Ecuador

Mar. 2017 – Aug. 2017

Senior Engineer

- Designed and implemented security practices for software and hardware development of embedded devices.
- Led a team for developing digital odometers using a distributed sensor network based on Zigbee.

Cigital, Boston, MA

Jun. 2016 - Aug. 2016

Security consultant (Intern)

- Performed manual vulnerability assessment and penetration testing of web applications according to OWASP 10 and ethical hacking runbooks.
- Completed assessment training camp including challenges for XSS, SQL injection, cryptology, code review, reverse engineering, and binary exploitation with ROP techniques for Linux and Windows.

EP Petroecuador, Quito, Ecuador

Sept. 2008 - Dec. 2014

Applications Analyst

- Conducted security risk and vulnerability assessment of the ERP IT platform (software, hardware and network) to identify information threats and mitigation strategies.

Sigmatron Ltd., Quito, Ecuador

June 2007 – Sept. 2008

Founding member / Developer Engineer

- Designed a universal access control system for Mitsubishi elevators using embedded controllers.
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PROFESSIONAL MEMBERSHIPS AND AWARDS

Memberships: ISACA, ISSA Northeastern University chapter.

Award: SENESCYT scholarship program “CONVOCATORIA ABIERTA 2013 – SEGUNDA FASE”

INTERESTS: Outdoors's activities including camping, biking and hiking.