

Cyril “Nick” Engmann

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PROFESSIONAL SKILLS

Programming Languages: Python, JavaScript, C/C++, Bash, Java, HTML, CSS, Ruby, C#, PHP, VBA

Related Skills: Linux, Soldering, PCB Design, KiCad, React, RF Engineering, Git, Arduino, Raspberry Pi, PlatformIO, 3D Modeling(Solidworks/Fusion 360), 3D Printing, Angular, Visual Studio, cmake, bitbake, Keil, Wireshark

PROFESSIONAL EXPERIENCE

Millennium Corporation, US Army – *Red Team Security Engineer IV, R&D Specialist* *January 2021 – Present*

- Responsible for developing Red Team tools for the Army’s Threat Systems Management Office (TSMO).
- Investigated and implemented new ways to execute keyloggers using commercial microcontrollers to avoid antivirus/malware detection methods.
- Created an out-of-band Command and Control(C2) Suite of tools leveraging LoRa-enabled commercial microcontrollers and a custom React GUI to enable long-range encrypted C2 channels for exercise needs.
- Created multiple microcontroller devices that leverage the ESP32 to host easily accessible web servers and user experiences for mission needs.
- Managing a team of software engineers, red team engineers, and interns to activate R&D objectives quickly.
- Adapting commercial hardware to create computer network exploitation tools to support close access and network penetration testing exercises.
- Reverse engineering proprietary hardware, software, and firmware to find undisclosed vulnerabilities.
- Performed red team, cyber-enabling, and physical penetration exercises as a technical lead of the close access and network exploitation teams.
- Leading multiple external contract and university research efforts to develop hardware and software supporting close access and network exploitation operations.

The Garage Agency – *Partner, Engineer* *September 2020 – Present*

- Providing consulting services for software/hardware engineering, design, and product development.
- Managing a fabrication and development laboratory/coworking space used for manufacturing client products.
- Contracted to provide engineering expertise to improve engineering team processes, provide code reviews, QA, testing, peer feedback, and contribute to product engineering

Circadence – *Systems Architecture Engineer, R&D Specialist* *September 2018 – January 2021*

- Responsible for architecting, implementing, and testing multiple software and firmware for Red Team tools.
- Leveraged microcontrollers to create trojanized mice, keyboards, and CAC card readers to carry out advanced attacks.
- Created an Intel x64-based Leave Behind Device running Kali Linux to establish covert C2 channels.
- Created custom hardware tools that leverage NMAP to scan networks and reveal potential attack vectors.
- Designed multiple custom PCB solutions utilizing both the ESP32 and ATTiny85 chipset.
- Utilized Software Defined Radio to spawn a custom 4GLTE Base station. Created an operational GUI in Python for users to forward traffic, track logs, and maintain Command + Control channels.
- Utilized CAD software to design multiple enclosures for custom hardware solutions.
- Maintains two high-quality 3D printers for both rapid design and production.
- Determined potential vulnerabilities of ICS devices using numerous scanning and enumeration techniques.
- Reverse engineered network protocols to find potential attack vectors in ICS devices and SCADA networks via analyzing packet data using tools like Wireshark.
- Represented Circadence while placing 6th place at Hack The Machine in 2019. Won over \$3000 worth of bug bounties against commercial 3D printer hardware.
- Served as a hardware security SME for the company's flagship products, including Project Ares.

Hackster – *Contributing Freelance Writer* *July 2019 – February 2020*

- Researched and covered different technologies that interest the readership.
- Curated 13 articles, with concepts ranging from green energy technologies to hardware cybersecurity solutions.

Space and Naval Warfare Systems Command (SPAWAR) – Engineer

July 2017 – September 2018

- Architected a solution to upgrade the communications platform to support the JAUS protocol on the TALON Explosive Ordnance Disposal Robot, using external embedded devices.
- Developed a radio command API in Python that interfaces with an embedded modular radio.
- Developed radio drivers in C/C++ to interface the radio with the embedded controller.
- Developed a React/Django application to calculate ROI on Cybersecurity tools for specific environments.
- Wrote man-in-the-middle scripts in BASH to control a centrifuge while spoofing the digital user interface utilizing the scapy, Netfilterqueue, and Ettercap python modules.

Quod Certamine – Owner, Software Engineer, Hardware Engineer

June 2016 – June 2017

- Provide technical solutions for small businesses and startups like CURB.
- Developed testing programs primarily in Python and C/C++ to manage software provisioning for a manufacturing facility in Dallas, Texas which produces over 1,000 units a month.
- Engineered a testing environment to produce accurate calibration values for high-precision current transformers.
- Developed an Amazon Alexa application in JavaScript utilizing CURB's backend APIs to enable verbal interaction.

PROJECTS

Moment Camera – Hardware

- Created a custom video camera leveraging a 16MP lens to record footage of my everyday life.
- Features WiFi connectivity, Google Drive storage, Flask Webserver, RTMP Streaming, Portable custom enclosure design, I2C interfaces (Accelerometer, Battery MCU controller, Rotary Encoder), I2S microphone, and SPI Display.

Pensieve Flashcards – Software

- Developed a React website to help individuals with technical interview prep using flashcards.
- Managed a team of contractors to curate educational content on the website.
- Topics ranged from the frontend and backend development to cybersecurity concepts.
- Participated in YCombinator Startup School while iterating on the design and the application's content.

CIVIC ENGAGEMENT (LEADERSHIP)

Bugs and Brews – Organizer, Co-founder

January 2020 – January 2021

- Organized a community for 50+ New York creatives and technologists to work on personal projects every week.

Major League Hacking (MLH) – Coach, Community Advocate

November 2015 – September 2019

- Helped student hackathon organizers from across the country run their hackathons while representing MLH.
- Helped students debug code and learn how to operate new hardware/software packages

EDUCATION

The University of Texas at Austin – Bachelor of Science, *Electrical Engineering*

May 2016

Track: Integrated Circuits & Embedded Systems

Minor: Government

The University of Texas System – *Bill Archer Fellow*

Spring 2016

Competitively selected for a semester-long Washington, D.C., internship and academic fellowship program

YCombinator Startup School – *Graduate*

January 2019

AWARDS

AND!XOR DefCon30 Capture the Flag – *1st Place*

2022

DefCon30 Badge Hacking Challenge – *1st Place*

2019

FireEye 2017 Cyber Defense Summit Capture the Flag – *1st Place*

2017

CERTIFICATIONS

Red Team Apprentice Certified Operator k>FiveFour (RTAC)

Certified Information Systems Security Professional (CISSP)

Certified Ethical Hacker (CEH)