Joshua Cepeda

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Work Experience

Software Engineer, Private Machines Inc. **2022 - Present**

- Led development of a secure x86-64 UEFI bootloader in implemented in C using EDK2 modules
- Conducted firmware-level cybersecurity research and threat analysis on Linux and Windows
- Hardened fleet of Linux server systems against firmware-level (BIOS, BMC) attacks in time-sensitive scenarios
- Assisted in bringing production of server hardware to scale, incl. electronics rework, logistics, shipping, expense tracking, and quality control
- Maintained UEFI BIOS code via custom Python/C++ build system and GitLab continuous integration tooling

Teaching Assistant, Notre Dame Department of Computer Science and Engineering **2021 - 2022**

- Courses: Systems Programming, Operating Systems
- Tutored fellow students core concepts of Unix systems programming and operating systems principles
- Assisted with debugging and grading students' Python, shell script, and C programs

Research Assistant, Center for Research Computing **2019 - 2021**

- Collaborated with students from other universities to write a System-On-Chip benchmarking suite in shell script
- Built custom Linux build environment with Yocto targeting Enclustra System-On-Chip board

Computing Assistant, Notre Dame Department of Engineering Science Computing **2019 - 2021**

- Wrote PowerShell and shell scripts to automate installation and maintenance of Windows computer clusters
- Performed routine maintenance and updates on school Windows and Linux computer clusters

Education

Bachelor of Science in Computer Engineering, University of Notre Dame **2018 - 2022**

- 3.6/4.0 GPA
- Trustey Family Merit Scholar

Key Skills

- Embedded programming: C, Make, CMake
- Automation and scripting: Bash, Python
- CI/CD tooling: GitLab CI, GitHub Actions
- Version control systems: Git, GitLab, GitHub
- Linux kernel driver development
- UEFI firmware development: EDK2, UEFITool
- BMC software tools: IPMI, Redfish, OpenBMC
- Reverse engineering x86 and ARM applications: IDA
- Embedded cryptography
- Embedded communications protocols: I^2C, SPI
- Electronics hardware: soldering, hot air rework

Activities

Notre Dame Hesburgh Hackathon **March 2022**

- Worked over 48 hours to prototype an Android mobile app in Flutter
- Interfaced with web APIs to present geoloation-based birdwatching challenges
- Won first place in competition with team