

# ROCK BOYNTON

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## PROFESSIONAL EXPERIENCE

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### Firmware Engineer – *Tesla*

Palo Alto, CA – *June 2021- Present*

- Designed and developed firmware in **C** for the Tesla Supercharger Electric Vehicle Supply Equipment (EVSE) system running with an **RTOS** serving 1.9 million charge sessions per day with 99% uptime
- Implemented device-side authentication system for third-party vehicle supercharging opening in Europe, multiplying total addressable market by 11X
- Supported North American third-party expansion with firmware drivers for new electromechanical hardware in addition to charging protocol and billing modifications, resulting in > \$2 billion of federal and state funding access
- Built software support for the state-of-the-art immersion cooling technology required for the Tesla Semi and V4 Supercharger 1 MW charging
  - Features include coolant ground current measuring algorithm capable of maintaining functional safety through stress tests, controls for new pump and fan, robust fault detection, and **CAN** telemetry + logging
- Spearheaded the first firmware component in Tesla written in **Rust**, resulting in an estimated savings of \$1 per vehicle or ~\$1.8 million per year
  - Features include robust single-wire UART comms to EVSEs over 3 m and 8 m cables, simultaneous **BLE** and proprietary **radio** comms with Tesla vehicles, and over-the-air (OTA) update capability

### Software Engineer, Intern – *Cognex*

Milwaukee, WI – *Summer 2020*

- Enhanced **C++** FW/embedded SW in machine vision tools, unit tested w/**JavaScript**, integration tested w/**Python**
- Fixed bugs and improved usability in our software for developing machine vision applications on **.Net Core** with **C#**
- Applied a feature of the open-source multi-testing framework, testplan, to dynamically generate test cases from test application files saving over 500 lines of code
- Recommended, implemented, and demonstrated Jira workflow triggers for company-wide Agile development teams to smoothly transition issues through the Scrum board via **Git** commit, branch creation, and PR submissions

### Software Engineer, Intern – *Leonardo DRS*

Milwaukee, WI – *Summer 2019*

- Wrote 3 CLI scripts in **Python** to aid in regression testing for the upcoming Columbia class US Navy nuclear submarine Main Propulsion Drive (MPD) programmable logic device (PLD) firmware verification team
- Facilitated conversion of existing code repository from Surround SCM to **Git/Bitbucket** by resolving edge case crashes and implementing multithreading in a **Python** conversion script, increasing speed of conversion by 30%
- Debugged PLD test scripts in Modelsim as well as **VHDL** code in a Git feature workflow contained in 2-week Agile sprints tracked in Jira with requirements managed in DOORS
- Produced a quick start guide for new hires outlining steps on getting acclimated with the code base and Git workflow

## EDUCATION

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### Milwaukee School of Engineering

Milwaukee, WI

Bachelor of Science in Computer Engineering, May 2021

*GPA: 4.0/4.0*

- Valedictorian, commencement speaker, Dean's list with High Honors, Presidential Scholarship

## TECHNICAL SKILLS

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- **Programming Languages:** ARM Assembly, Shell, C, C++, C#, MATLAB, Python, VHDL, Java, JavaScript, Rust
- **Applications:** Altium Nexus, Bash, Bitbucket, CANape, Docker, Git, GitHub, JetBrains IDEs, Jira, LTspice, Modelsim, Multisim, PCAN, Polarion, Qsys, Quartus, Simulink, Visual Studio, VS Code, Waveforms, Wireshark
- **Other:** CAN, JTAG, Linux, Logic Analyzers, Oscilloscopes, PCB design, RTOS, TCP/IP

## ACTIVITIES

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- **Projects:** 📷 Automated hand sanitizer, 📷 Joystick + Accelerometer Controlled Camera, 📷 Remote Locking System
- **Open-Source Software Contributions:** @rust-lang, @probe-rs, @avr-rust, @docker, @microsoft, @gitkraken
- **Athletics:** Goaltended for MSOE Varsity Hockey – NCAA III - NCHA All-Academic Team 2018-19/2019-20
- **Hobbies:** Hiking, backpacking, skiing, Brazilian Jiu-Jitsu (blue belt), learning languages (Spanish, Japanese)