

# AZRIEL SAMSON

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## WORK EXPERIENCE

### Ample Inc

**Vice President of Engineering, Software**  
**Director of Software Systems**  
**Software Engineer**

**San Francisco, CA**

**Feb 2025 - Sept 2025**  
**Oct 2020 - Jan 2025**  
**Nov 2017 - Sept 2020**

- First software engineering hire; contributed to the foundational development of Ample's modular battery packs, battery module charging, and swapping systems
- Defined and implemented the software architecture that reduced the time required for battery pack integration with new vehicles from months to one week
- Hired and managed a team of 13 engineers across battery software, swapping station services, test automation, and cloud software
- Led OEM engagement from requirements gathering to software integration, collaborating on-site at OEM headquarters and remotely to enable multiple pilots across America, Asia and Europe
- Led integration of 9 vehicles, each from a different OEM, including reverse engineering CAN protocols
- Led hardware selection for FreeRTOS & Linux (Yocto) microcontrollers, integrating modem and WiFi functionality. Developed networking software for Ethernet, WiFi, and modem, leveraging wpa\_supplicant, hostapd, CDC ECM, and QMI
- Implemented BMS software for cell voltage/temperature sensing, SOC estimation, power limits, HVIL, isolation detection, contactor diagnostics, AC charging, and crash detection
- Developed configuration management and OTA solutions for a distributed microcontroller system
- Led migration to functional safety architecture via collaboration with NXP and Vector on the Autosar stack
- Developed a structured logging framework resilient to power resets, enabling log offloading at swapping stations via FluentBit, data transfer to the cloud via Kinesis, analytics with Amazon OpenSearch, and visualization in Kibana. Became the primary tool for debugging and postmortem analysis across all Ample systems
- Contributed to the architecture of AWS-based cloud services, enabling remote monitoring of swapping stations and battery modules, battery pack diagnostics, user authentication, and mobile app integration. Leveraged JavaScript, React, RabbitMQ, MongoDB, Docker, Kubernetes, Passport.js, EC2, S3, Lambda, EKS, and IAM
- Designed Hardware-in-the-Loop (HIL) setups using Python and Robot Framework for battery pack testing
- Completed ISO 26262 Functional Safety training (UL), Autosar training (Elektrobit), and exposure to ISO 21434 (Automotive cybersecurity)

### Qualcomm

**Senior Engineer, Boot Server Software**

**Boulder, CO**

**June 2016 - Oct 2017**

- Implemented a GDB stub in UEFI for ARM64 to enable debugging via GDB from a remote Linux machine
- Responsible for firmware crash dumps used by various firmware teams
- Designed and implemented the System Debug Image to capture crash dumps containing all CPU context, trace buffers and critical memory regions required to debug a system crash
- Implemented scripts to restore system context from a crash dump in an offline simulator

**Engineer, Linux Server Software**

**June 2013 - June 2016**

- Integrated kernel crash dump feature on ARM64 and developed workflow for collecting device crash dumps
- Responsible for Linux kernel and filesystem images used by the entire team
- Created and maintained the build and load environment
- Created and maintained various filesystems using the OpenEmbedded framework
- Managed deployment on target from different media and network-based PXE boot environment
- Customized init scripts and packages for the filesystem

### Lutron Electronics

**Embedded Intern, Mass Market Wireless**

**Coopersburg, PA**

**Summer 2012**

- Designed a gateway that enables third-party ZigBee equipment to seamlessly integrate with Lutron RF devices
- Conducted extensive analysis of ZigBee and Lutron's proprietary RF protocol, Clear Connect, to devise a software architecture that is most optimal for the gateway

- Worked with the ZigBee Pro stack and Home Automation profile using Ember's development tools

## University of Pennsylvania

Philadelphia, PA

### Research Assistant, Real Time Systems Lab

Spring 2013

- Developed an open source implementation of the data link layer of ISA100.11a - a wireless synchronous protocol for industrial automation on small microcontrollers with radios compliant to IEEE 802.15.4
- Implemented node synchronization with gateway, time correction, Neighbor Discovery, and Graph Routing. Demonstrated limited interoperability with an industrial stack.

## TECHNICAL SKILLS

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- **Languages:** C, C++, Python, Node.js, AngularJS, Shell scripting
- **Protocols:** CAN, I2C, UART, SPI, BLE, LTE, GPS, RFID, NFC, UWB

## EDUCATION

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### University of Pennsylvania

Philadelphia, PA

Master of Science in Embedded Systems Engineering

2011 - 2013

### Mumbai University

Mumbai, India

Bachelor of Engineering in Electronics Engineering

2007 - 2011

## ACCOMPLISHMENTS

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- Patent application: Electric Vehicle Battery Charging and Support Rack (US20240039311A1)
- Winner at Pennhacks – UPenn's first hardware hackathon. Designed a 'Virtual Window' that allows the user to move a remotely mounted camera on a pan and tilt system using gesture recognition tracked by a Kinect