

BRIAN GREENFOREST

PRINCIPAL HARDWARE & SOFTWARE ENGINEER

Remote Only | Washington State | U.S. Citizen

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APRIL 2022-PRESENT

AMAZON LEO (formerly Project Kuiper) via TEKSystems

Sep 2025-Present

Software Development Engineer IV (Contract) | Rust, Tokio, Kameo, gRPC/Protobuf, Linux/ARM, SCPI/IP, Docker/systemd, React/TypeScript

- Hardened Rust/Tokio/Kameo services on ARM Linux that coordinate SCPI/IP instruments across more than 100 electrical ground support equipment (EGSE) racks for Amazon's Low Earth orbit (LEO) satellite program; restored rack operation for hardware test teams when failures crossed gRPC/Protobuf, Docker/systemd, AWS control surfaces, and the React/TypeScript rack UI.
- Diagnosed stalled test runs through the rack UI, control-plane actors, network links, power controls, CAN gateways, and instruments; isolated messaging faults and RAM/resource leaks so operators could identify the failing layer and resume interrupted hardware tests.
- Separated long-lived rack-control actors from per-test execution in the Kameo lifecycle, preventing failed runs from obscuring persistent hardware ownership and giving test operators a defined recovery path.

METEORCOMM

Apr 2024-Aug 2025

Senior Embedded Linux Software Engineer I | C/C++, Python, Yocto/PetaLinux, systemd, Linux kernel/BSP, Xilinx Vivado/Verilog, SDR

- Repaired C/C++ network-management and Linux service paths on 220 MHz railroad SDR radios, tracing failures through systemd, Yocto/PetaLinux, kernel/BSP code, DMA, and Xilinx FPGA/DSP interfaces until affected radios again carried the expected management and message traffic.
- Implemented an over-the-air ITCnet/DQPSK decoder and Python/C verification tools that displayed received frames and protocol fields, letting lab and field engineers determine whether a missing packet failed in RF reception, modem processing, the driver, or application code.
- Built repeatable system re-imaging and deployment tooling that put test and field units onto a known software/FPGA image, giving technicians a direct way to recover a radio and resume verification.

CONFIDENTIAL EMBEDDED AEROSPACE CLIENT via Solid State Pros

Jan-Feb 2024

Embedded Systems Consultant | Raspberry Pi, Linux kernel, IPv6, STM32 Nucleo, lwIP, EXI

- Delivered the end-to-end EXI charger-control path from a Raspberry Pi/Linux host over IPv6/lwIP to STM32 Nucleo firmware, allowing the client to command the charger and receive device responses through one working host-to-microcontroller system.

SOLID STATE PROS LLC

Oct 2022-Jan 2024

ML/DSP Research Engineer | PyTorch, computer vision, Transformers, embeddings, RAG, C++/RTL

- Delivered a confidential 2023 computer-vision architecture report that placed SuperGlue's graph-attention, Sinkhorn, and dustbin matcher inside hierarchical localization and SfM/SLAM, then compared it directly with LightGlue, LoFTR, MatchFormer, MixVPR, DINOv2/SALAD, TransVPR, and R2Former so the client could distinguish local matching, global retrieval, and complete localization components.
- Mapped concrete successor paths from SuperGlue to newer matching and visual-place-retrieval systems, including RetroMAE and E5-PT embeddings and RAG-backed retrieval, giving the client component-level alternatives instead of treating one matcher as the entire vision stack.
- Decomposed Transformer attention and inference into PyTorch/C++ and DSP/RTL implementation paths and delivered FLOPS-per-dollar and SRAM tradeoff reports that exposed the memory, hardware, and cost consequences of each architecture choice.

ROBOTS & PENCILS / ARIZONA STATE UNIVERSITY

May-Sep 2022

Principal Software Engineer | React, Node.js/TypeScript, Python, AWS Lambda/SQS/S3, DynamoDB, PostgreSQL, OpenSearch

- Recovered ASU's video library before the new school year by reconciling DynamoDB records, PostgreSQL rows, S3 media objects, and OpenSearch indexes; restored a catalog in which students and instructors could search for a video and reach the stored media it represented.
- Rebuilt the React client and Node/TypeScript Lambda APIs and added Python repair and migration paths through SQS, S3, schema changes, and OpenSearch indexing, making each recovered video resolve from its browser result to the correct database row and media object.

JULY 2016-MARCH 2022

MATCHSELL

Dec 2021-Mar 2022

Partner / Full-Stack Software Engineer | Vue, Quasar, Node.js, SQL

- Architected and built the Vue/Quasar workflow linking inventory records, marketplace listings, and the sales CRM, giving sellers one continuous path from entering an item through publishing it and following the sale.
- Defined page state, navigation, client caching, SQL models, and Node.js interfaces so item, listing, and customer changes remained available across every selling screen instead of requiring operators to reconcile separate records.

ZOOM VIDEO COMMUNICATIONS

May-Oct 2021

Senior C++ Software Engineer | C++, Vue.js, chat middleware, synchronization, cache, presence, search

- Shipped new functionality in the cross-platform Zoom Chat C++ library across synchronization, caching, presence, search, attachments, and offline recovery, keeping conversation history, participant status, search results, and shared files usable across connected and disconnected sessions.
- Traced state mismatches across the Vue UI, cached data, network loss, app restarts, and backend protocol changes; aligned the C++ cache and synchronization path so users returning after a reconnect or restart received current chat state instead of stale UI.

SOLID STATE PROS LLC

Jun 2020-Apr 2021

Embedded Systems Architect | WebGL/GLSL, Verilog/SystemVerilog, Xilinx and iCE40, Linux C++, flex PCB

- Implemented Cartilage's spatial reconfiguration fabric as raw WebGL/GLSL state machines with local routing, serial configuration, ownership, and nested regions visible while the machine ran, giving engineers an executable browser artifact for inspecting the fabric without FPGA hardware.
- Designed FPGA and flex-PCB embodiments and published an end-to-end source path in which a Xilinx FPGA receives an Ethernet-carried configuration image, answers ARP in RTL, stores the image, and programs an adjacent iCE40 under Linux control, enabling downstream-FPGA reconfiguration over ordinary Ethernet without a dedicated external programmer.
- Prototyped multi-chip iCE40 tiles on flex PCB and drove them through a Python DSL, turning the browser and RTL architecture into scriptable physical hardware.

NINTENDO OF AMERICA via AIM Consulting

Jun 2019-May 2020

Senior Full-Stack Engineer | React/Redux, Python, AWS CloudFormation, Aurora/MySQL, Java, Sqitch

- Architected and built the React/Redux front end for Nintendo's third-party digital-code ordering portal: reusable forms, a multi-step wizard engine, navigation, shared state, and centralized validation that guided publishers from order entry to a complete, validated submission.
- Implemented Python APIs, Java-service integration, Aurora/MySQL changes, Sqitch migrations, and AWS CloudFormation so validated publisher orders moved from the browser into Nintendo's services and durable database through repeatable infrastructure and schema deployments.

SINCLAIR DIGITAL / KOMO NEWS

Sep 2018-Jan 2019

Front-End Developer | React, Redux, browser media and publishing

- Shipped React/Redux article pages, navigation, video playback, and infinite scroll for KOMO News, letting readers move through live local reporting and video without leaving the production reading flow.
- Added AMP-compatible mobile delivery and integrated advertising and partner content with Sinclair's existing publishing system, keeping fast mobile articles and revenue-bearing placements available through the newsroom's normal publication path.

SOLID STATE PROS LLC

Jul 2016-Sep 2018

Senior Full-Stack Engineer / Partner | React/Redux, Node.js, PostgreSQL, WebSockets, Docker, AWS

- Shipped Tombolo's nested multi-user privacy workflow for Stoel Rives via Point B in React/Redux, Node.js, PostgreSQL, and WebSockets, giving multiple users one live hierarchy in which concurrent work stayed attached to the record being edited.
- Engineered conflict-aware save and reconciliation that loaded the latest state, exposed competing edits at their exact location, and let users resolve them in place without silently overwriting work, locking the entire record, or adding an OT/CRDT layer.

PUBLIC HARDWARE & SOFTWARE

- [FPGA systems from pins to bitstreams](#) | [Cartilage Core: WebGL and SystemVerilog](#)
- [Raw WebGL and GLSL computation](#) | [Ethernet to an adjacent iCE40](#)
- [One-pin FPGA FM receiver](#) | [Four-layer tiny Transformer training run](#)

EDUCATION | B.S., Electrical Engineering - Semiconductor Technologies | Samara State Aerospace University | 2003