

# Paul Leimer


Senior Software Engineer

## Contact

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 Contact for info

 TODO

 paulleimer

## Frontend

Typescript

HTML

CSS

## Backend

golang

SQL

REST

gRPC

protobufs

## Databases

Postgres

MySQL

MongoDB

## Platform

Kubernetes

Docker

Jenkins

Github Actions

## Summary

Paul is an experienced full stack software engineer in scalable web app systems. Let's talk about positions in this arena!

## Experience

### Tesla

03/2023 - 06/2024

Senior Software Engineer

Led the creation of a versatile digital-twin platform for real-time production data visualization, overseeing frontend and backend development. Managed the entire development cycle, from architecture design to feature prioritization, resulting in a configurable platform for clients to integrate live production data into 3D renderings of manufacturing sites.

- Platform enabled customers to build digital twins of production areas by providing live streamed production data to be bound to custom geospatial environments that could be built in-app.
- Led the planning and development for both frontend and backend services, utilizing Postgres (SQL) for persistence and streaming (LISTEN/NOTIFY + Websocket), Golang for backend services, middleware and Websocket + REST APIs, and ReactJS + Typescript paired with ThreeJS for primary UI functions
- Implemented extensive design and optimizations for 3D environments, including an algorithm for  $O(\log(n))$  broadphase collision detection (BVH + SAH rotation), increasing max mesh count by 20,000% compared to other solutions
- Designed middleware for Oauth flows in the frontend and backend, utilizing Azure for authentication and a proprietary OPAL solution for RBAC authorization
- Designed a general component relational data model for tracking components in a geospatial, 3D environment that utilized json-schema for parameter validation. This enabled flexible approach ...
- Implemented REST and Websocket API along with middleware for Oauth authentication (azure), authorization RBAC (proprietary OPAL solution)
- Collaborated with a small team to run extensive architecture and UI design sessions, create development plans and project roadmaps
- Mentored interns and other engineers to contribute
- Managed all aspects of the project development, including automation tooling (codegen, db migrations, testing), monorepo services structure, integration test suites (testify, playwright), quality assurance, and deployment with Docker, Kubernetes and Jenkins
- Spearheaded adoption of the platform throughout the company by running tech talks, customer and director demos and working directly with customers to evaluate features and designs

### Tesla

01/2022 - 02/2023

Software Engineer

Managed and developed features for an Event Sourced MES system and other production systems, largely relating to cell production. Was the primary point of contact for cell production software in the Austin factory.

- Built gRPC and Kafka APIs and features to integrate data model of an Event Sourced MES application with various transactional systems. Efforts involved designing integration flows and developing new gRPC + protobuf APIs, Kafka Consumers and publishers, resulting consistency of quality and build data in downstream and upstream systems.
- Worked with multiple teams and customers to develop backend and UI features using Golang, ReactJS and Typescript for lineside associates to interface with downtime reporting systems
- Developed multiple React, ThreeJS and SVG (d3) dashboards for tracking trailer shipments and automated guided vehicle live location on maps that displayed various KPIs with livestreamed data
- Lead cross team efforts to diagnose various issues in Tesla's technical infrastructure that affected our apps, including identifying a TCP MTU size misconfiguration between external and in-cluster load balancers that caused arbitrary dropped packets in communication over gRPC APIs.
- Built golang CLI tools that interfaced with our gRPC APIs for our support engineers to use to satisfy many bulk data tasks and ran training sessions
- Developed various features in a proprietary protocol that enabled PLCs to automatically control lineside systems and update build models/statuses
- Instrumented apps with metrics and logs, built monitoring dashboards in Grafana and Splunk to monitor the health of our apps
- Participated in on-call rotations, swiftly diagnosing issues, deploying hotfixes, and rectifying data discrepancies in production environments to minimize downtime and ensure uninterrupted service delivery.

### Red Hat

05/2019 - 12/2021

Software Engineer

Worked with a team to implement and document the unified Service Telemetry Framework, the official multi-regional OpenStack + OpenShift (Kubernetes) cloud health monitoring framework

- Led architectural overhaul of core gateway golang service, implementing a micro-kernel architecture drastically improving development cycle time by minimizing technical debt and increased throughput performance by more than 3x

- Implemented various services and APIs in Golang, Python, NodeJS and C that improved OpenStack and OpenShift (kubernetes) cloud health monitoring and automated cloud provisioning processes
- Standardized monitoring dashboards with Grafana, Prometheus and Elasticsearch
- Advanced RedHat initiatives in open source projects by working with upstream communities (CentOS, RDO and Fedora) to package and release services and features as RPMs and Docker images

## **Hughes Network Systems**

05/2018 - 08/2018

Software Engineering Intern

Developed a web apps using a MEAN + python stack to enable the configuration, automation and execution of tests that hardware engineers must run frequently, reducing test time from hours to minutes

- Built dashboards to configure and run tests that executed profiling tools between geographically dispersed satellite gateways, collected results via REST queries, persisted in MongoDB and displayed results in Angular JS dashboards
- Implemented system for persisting test configurations and scheduling test execution cron jobs

## **ATI Industrial Automation**

08/2017 - 12/2017

Software Engineering Intern

Designed, built and documented firmware and hardware design for an ISP firmware flasher using Atmel MCUs and C++, replacing a legacy system and decreasing flash times by over 300%

- Compiled user manuals, design decision analyses and build instructions so that more programmers could be manufactured by other teams. Presented the final project to senior management
- Characterized noise of integrated circuit operation in tool-changer sensors for accurate estimates on product documentation (< .1%) using Python and statistical models

## **Education**

### **North Carolina State University**

08/2014 - 05/2019

#### **Awards**

### **2nd Place Engineering Design Fair**

NCSU EE/CPE dep

Won 2nd place in the educational category by building a mobile game using DART to make power grid optimization fun and educational for students

### **Eagle Scout**

Boy Scouts of America