Jonathan Kelley

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github.com/jkelleyrtp

EDUCATION

Olin College of Engineering | Boston, MA — **August 2018 - May 2022**
Electrical and Computer Engineering - Software Systems

EXPERIENCE

HASH AI - *Fullstack Platform Engineer* — **Aug 2019 - Jan 2021**, *NYC, Remote*

Fulltime role building next-gen Agent-Based-Modeling Engine and IDE for business intelligence.

- Interviewed, hired, and managed the "Cloud" and "Engine" teams across 5 timezones to launch the company's first product.
- Developed mutlithreaded low-latency columnar datastore for simulation data on top of **Apache Arrow**.
- Architected and implemented distributed simulation engine written in **Rust** and deployed to **AWS EKS** (20K+ LoC).
- Upstreamed improvements to various **open source** projects including **Pyodide**, **Apache Arrow**, and **PyO3**.
- Enabled **WebAssembly** compilation of the core simulation engine using **WebWorkers** as a multithreaded runtime.
- Built backend **GraphQL** and **REST** APIs in **NodeJS** and **TypeScript** with frontend components in **React** and **ThreeJS**.

Quartz Inc - *Systems Engineering Intern* — **April 2019 - Aug 2019**, San Francisco, CA

Summer internship role building next-gen intelligence system for large construction jobs.

- Designed and deployed industrial-grade camera and sensor hardware for live tower cranes in San Francisco.
- Improved wireless streaming and visualization performance by over 300% with a suite of **Python** + **Go** analytics tools.
- Implemented **deep-learning** enabled heads-up display for tower crane operator in **Rust** with **GStreamer**, **GTK** and **CUDA.**

NASA Langley Research Center - *Systems Engineeirng Intern* — **Aug 2016 - Sept 2018**, Durham, NC

Year-round internship working alongside NASA Langely engineers to build solutions for problems on the ISS.

- Designed zero-gravity injection molding system for in-space fabrication in **Solidworks** and **ANSYS.**
- Designed and built **RFID** and **UWB** wireless asset managemenet solution in **KiCAD** and **C++** using **nRF52832.**

Duke TUNL Research Lab - *Plasma phyisics researcher and intership* — **Sept 2016 - June 2018**, Durham, NC

Self-designed computational and experimental physics research into Inertial Electrostatic nuclear fusion.

- Developed intertial plasma Particle-In-Cell simulation engine in **Python, C**, and accelerated with **OpenCL**/**OpenMP**.
- Published paper in Broadstreet Scientific on optimization of design using **neural networks** and **genetic algorithms**.

PROJECTS

Dioxus frontend framework for Rust — `https://github.com/dioxuslabs/dioxus` `3500+ stars`

Released open source framework for building apps in Rust for web, desktop, mobile, and more.

- Gained over 2400 stars in just 3 weeks with 150 active community members and 1000+ git commits
- Implemented **advanced datastructures** and **memory allocators** to surpass React's performance by 350%+

LEAF Systems — `https://leaf-systems.io`

Lead developer for angel-backed startup modernizing inventory management for manufacturing.

- Finalist for MIT's Lemelson Student Prize, 100K Pitch, 100K Accelerate, and Fuse competitions.
- Developed asset tracking system leveraging **computer vision**, **deep learnng**, and **ultrawideband sensor fusion**.

WiFi From Scratch - Realtime OFDM Video Broadcast — `https://github.com/jkelleyrtp/ofdm`

Implemented the WiFi protocol from scratch on the Ettus USRP software-defined-radio.

- Developed a **Rust-Verilog-CUDA data pipeline** for streaming video with implemented bandwidth of 1MB/s.
- Implemented modern **OFDM, MIMO, 64QAM** and active frequency correction.

SKILLS

Software
- Rust, Go, C++ 14, C99
- Python, TypeScript, JavaScript
- Machine Learning: NN + DL
- Graphics and General GPU
- Computer Vision
- WebAssembly

Frameworks
- PyTorch, Tensorflow
- React, Redux, Recoil
- OpenCV + Pointcloud Lib
- OpenCL, Cuda, OpenMP
- Numpy, Pandas, Matplotlib

DevOps
- AWS EKS, EC2, Lambda
- Terraform, Vault, Consul
- CircleCI, PagerDuty
- Cloudfare CDN + Workers
- Docker, Kubernetes
- InfluxDB, PostgreSQL, Redis

Electrical
- KiCad, Eagle, Spice
- SMD design and assembly
- Power electronics
- Microelectronics, firmware
- RF Desgin
- Digital comms