Jiahong Long

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Skills & Technologies

- 10 years combined industrial, academic, and personal experience using `x86/arm` assembly, `git`, `go`, `latex`, `zsh`, `duckdb`, `matlab`, `c++`, `c`, `python`, `rust`, `java`, `bazel`, `ros`, `antlr`, `haskell`, `spring`, `numpy`, `scipy`, `pandas`, `polars`, `sqlglot`, `bigquery`, `pytorch`, `opencv`, `buildkite`, `travis`, `magic-trace`, `perf`, `circle`, `jenkins`, `jira` experience with building userspace applications for (soft realtime) POSIX environments
- 10 years of daily driving `arch/i3`, `macOS/yabai`, and both `vim` and `emacs` (yes, both)

Education & Coursework

University of California, San Diego / M.S. Computer Engineering
Fall 2022 — now, La Jolla, CA. On leave of absence.

- Intelligent Systems, Robotics, and Controls

B.S. Applied Mathematics (4.00) & B.S. Computer Engineering (3.90) with honors
Fall 2019 — Spring 2023, La Jolla, CA. Two degrees conferred.

- Algebra, Numerical, Real & Complex Analysis, Nonlinear Optimisation, Signal Processing, Statistics
- OS, Compilers, Computer Vision, Architecture, Computability Theory

University of California, Berkeley / 2020 Summer Sessions

- Data science and computation, statistical inference, data-driven system modeling (DATA 100)

Experience & Projects

Cruise Automation / ML + Robotics Engineer, Maneuver Planning and Simulation
May 2022 - present, San Francisco, CA

- 10x'ed the performance of the internal simulation analysis and metrics framework extensible under a shift to simulation-first stack evaluation and order-of-magnitude increase in number of framework customers (`magic-trace`, `c++`, `python`, `bazel`, `ray`, `spark`, `polars`)
- Defined and shipped the first error rate SLA for the analytics platform and delivered several major architectural refactors to simplify and reduce the configuration space *with no downtime*
- Contributed to open-source data science toolkits to support internal use cases (`duckdb`, `sqlglot`)
- Started an org-level literature review tradition
- Introduced novel error handling practices and consolidated fallback structure for a legacy nonconvex solver within route planning, rearchitecting system to improve developer experience and fault tolerance (`c++`, `ROS`, `bazel`)
- Built automated accuracy studies for long-lifed models to guard against input distribution shift subject to AV data retention constraints (`python`)

Bolt Financial / Software Engineering Intern, Merchant Tools
January 2022 - May 2022, San Francisco, CA

- Migrated decentralised legacy internal developer onboarding flow to a new internal personnel management dashboard, performed various tech debt updates (`golang`, `k8`, `gorm`, `tsx`)

Amazon / Software Development Engineering Intern, Alexa Smart Properties
June 2021 - September 2021, Seattle, WA

- Deployed a customer-facing enterprise SaaS product management portal on a `react`, `spring`, and `AWS` based internal software stack, rolling out protected REST endpoints deployed via Cloudformation

Personal projects
September 2012 - present

- Currently upstreaming improvements to `duckdb`, `sqlglot`, `bazel`, `pyright`
- Build and compiler engineering at `github.com/achierius/arrow-asm` to implement a SPARC inspired assembly-like language with move semantics (`c++`, `starlark`)
- Bringing up a `c++`-based ROS-like middleware with an emphasis on fast lockless shared memory IPC and compile-time message subscription at `github.com/valkyrierobotics/wyrd` (private)
- Implementing `libc/string.h` functions in x86 assembly at `github.com/achierius/aolc`
- 6+ years building FIRST FRC robotics middleware (`c++`, `starlark`)