

Jonathan Fung

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Experience

dYdX Trading – Software Engineer, Backend Protocol Team

San Francisco + New York / 2023 - present

- Responsible for the core e2e trading flow of dYdX protocol, a decentralized orderbook exchange. Designed and implemented the matching engine, central limit orderbook, exchange consensus mechanisms, advanced order types, and liquidations/deleveraging.
- Every trade on dYdX is executed through the matching engine, which has processed **over \$210 billion in trading volume**, yielding up to **\$2.5 million in weekly trading fees** during peak periods. Record daily volume was **\$2.1 billion**.
- Led development of a **thread-safe, real-time gRPC/websocket streaming framework** to stream orderbook events to market makers. Project doubled liquidity on the exchange.
- Responsible for long tail observability and latency work. Project enabled matching engine to process **5k orders/second** across 150 markets by supporting **5x higher throughput**.
- Managed node deployments via terraform and kubernetes. Developed first on-call rotation by adding first metrics library, monitoring, and alerting to our systems.
- Primary engineering contact between dYdX and various external stakeholders for protocol security audits, compliance integrations, and official software binary releases.

Scale AI – Software Engineer, Infrastructure

San Francisco, CA / 2020 - 2023

- Led the design and development of the task dispatch framework v2. Introduced retroactive searching, mandatory tracing, caching, and logging for increased explainability into the task dispatch service. Decreased P95 latency of dispatch endpoint by **>95%**. Project enabled a **7-digit revenue stream** opportunity by supporting a 20x higher task labelling throughput and **eliminating lock contention**.
- Designed and built Scale's **blob storage proxy microservice** to separate logical and physical data storage. Fronted multiple underlying source of truth storage backends (S3, Azure, GCP). Provides transparent **per-customer encryption key** management and data lake style metadata search built on DynamoDB/Elasticsearch. Designed unified HTTP Json API for cross-language support. Project enabled multiple significant revenue streams due to increased security from per-customer encryption keys.
- Rolled out first **metrics library** to increase system observability. Deployed first internal **code search tool** with double-digit millisecond tail response latency.
- Unlocked the use of **ML linter jobs** by developing a **data linting framework** used by all data labeling queues at Scale. Linters jobs could be run either async or sync.
- Mentored intern, wrote coding + debugging engineering interviews, university recruiting.

Pinterest – Software Engineer Intern, Kleiner Perkins Fellow

San Francisco, CA / Summer 2019

- On the **Observability team**, working with logging and metrics.
- Built metrics reporting pipeline to support accurate, t-digest based **by-host horizontal aggregation methods**. Processing **8 million metrics per second**.
- Reduced infrastructure costs by **\$1.2 Million per year**. Achieved **99% reduction** in metrics storage volume.
- Project featured on the Pinterest Engineering Medium blog. [jonfung.me/mediumpost](https://medium.com/@jonfung)

Stripe – Software Engineering Intern

San Francisco, CA / Summer 2018

- **Developer Productivity** team. Implemented Ruby Enums in Stripe's Ruby Static Typechecker (Sorbet) and code refactored ~2000 modules to a new enum format.
- Added LSP (Language Server Protocol) support for Sorbet. Features added include Jump-to-Definition and Type-on-Hover, all accessible through the VSCode IDE or any other code editor.

Education

University of California, Berkeley

B.S. Electrical Engineering and
Computer Sciences

GPA: 3.90/4.0

- Magna Cum Laude (High Honors)
- HKN EECS Honor society
- TBP Engineering Honor Society
- Regent's and Chancellors Scholarship (Top 2%)

Skills

Languages

- Java, Python, Typescript, Ruby
- Scala, Golang, Bash

Technologies

- Unix, Docker, Terraform, AWS, GCP, Kubernetes, gRPC, Protobuf
- MongoDB, Redis, Kafka, Elasticsearch, DynamoDB, MySQL
- Thrift, HTTP frameworks (flask, express)

Concepts

- Metrics, Observability, Developer Productivity
- Large-scale code migrations
- Blockchain (cosmos-sdk)

Awards

- **Accel Scholars**
Industry fellowship program by VC firm Accel
- **Kleiner Perkins Engineering Fellow**
- **Jane Street Electronic Trading Contest 1st place**

Projects

PinGREP – Pinterest's real-time source code search tool

- Pinterest Hackathon 2019. Productionized internal forks of open source projects (Livegrep, Webgrep) to provide real-time source code search across all source repositories with **double-digit millisecond median query latency**.
- Fully integrated with Pinterest internal services. Implemented as a **scalable, fault-tolerant service mesh** with load balancing, internal auth, and multi-zone redundancy.
(made fast ctrl-f across whole codebase)