

Gabriel Lee

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EDUCATION

CMU SCS | BS

Aug 2019 – Dec 2022

- **Computer Science** major
- **Computer Systems** concentration
- Relevant coursework:
 - Distributed Systems
 - Database Systems
 - Parallel Computer Architecture
 - Computer Security
 - Programming Language Pragmatics
 - Algorithm Design and Analysis
 - Parallel & Sequential Data Structures
 - Artificial Intelligence

ACADEMIA

CMU ISR | RA

Jan 2022 – May 2022

- **Gnomad: a Time-Aware Parallel DSL** under [Kyle Liang](#) (ISR PhD candidate) & [Jonathan Aldrich](#) (ISR professor)
- *Project: a **dataflow** based DSL (IoT usage)*
- Designed a **grammar** and **transpilation** rules (to existing backend for graph compilation & execution: [TTPython](#))
- Implemented in **JavaScript** using **nearley** parsing toolkit

CMU SCS | TA

Jan 2022 – May 2022

- **Introduction to Computer Security** under [Lujo Bauer](#) (ECE professor) & [David Brumley](#) (ECE professor)
- Lead TA for **Cryptography**
- Helper TA for **Web-based Attacks**

INTERNSHIP EXPERIENCE

MONAD LABS | SWE

Jan 2023 – Apr 2023

- **Core Engineering: Execution**
- (*Startup*) **Low-latency C++ L1 blockchain dev**
- Wrote **RLP serialization** for ETH primitives
- **Optimized** (using **perf**, **godbolt**) [silkworm](#) (unbatched execution) staged sync by storing state diffs **in-memory** for **baseline performance** (timing, caching, page-faults)
- Designed/implemented Monad validator run loop framework using **template metaprogramming** for hard fork traits
- Designed/implemented framework for Eth precompiles using **template parameter pack**
- Explored dynamic precompiles (LLVM JIT on EVM bytecode) through **dlopen**

JANE STREET | SWE

May 2022 – Aug 2022

- **Core Services: Distributed Systems**
- Designed and added features to firm-wide used custom hierarchical high-availability **pubsub** system in **OCaml**
- Created a **low-latency** service for **monitoring** and **logging** data packets
- Implemented **RPC** for monitoring aggregated accesses to sub-hierarchies **asynchronously** using **pipes**
- **Options Desk: Trader Tools**
- Created a **web-based** visualization **trading tool** optimized for abnormality signaling on options (derivative) in **OCaml**
- Implemented a backend **RPC** server for handling data processing (**filter/aggregate**) and streaming using **pipes**
- Wrote a **CLI** version of the web client for testing new features on the backend server

GOOGLE | SWE

May 2021 – Aug 2021

- **Google Cloud Platform: Kubernetes Engine**
- Designed/implemented a scalable service in **Go** which attaches insights onto GKE incidents
- Wrote a **library** for developing GKE insight modules which reduces code volume by ~ 66%
- Deployed a **scalable server** module that responds to **RPCs** by running all GKE insight modules in **parallel**
- Developed GKE insight modules: related bugs, cluster diagnostics, & mitigations, zonal packet loss (**graph**)

FACEBOOK | SWE

May 2020 – Aug 2020

- **Facebook Reality Labs: Telepresence Software**
- Designed/implemented a **metrics analytics** framework in **C++** for FRL with console, file, and FB backend output
- Developed a **Unity C#** native **plugin** using data (**de**)**serialization** for the analytics framework
- Wrote internal tools (**Unity & CLI**) using **C#** and **Python** for viewing and playing back codec avatar nodes
- Wrote **Hack/PHP** scripts for bulk uploading/deleting codec avatar nodes on FB backend