

SIRUI CHEN

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SUMMARY

Software Development Engineer with robust experience in full-stack development, distributed systems, and cloud-native infrastructure. Proven ability to design scalable web architectures, build performant data pipelines, and deploy production-ready applications on **AWS**. Strong foundation in math, algorithms, systems, and object-oriented design, with hands-on experience in **Python**, **JavaScript**, and **C++**.

EDUCATION

University of Pennsylvania

Master of Science in Engineering in Computer and Information Science

Philadelphia, PA, USA

Aug. 2024 – May. 2026(Expected)

- Main Courses: *Internet and Web Systems, Database and Information System, NLP*

Washington University in St. Louis

Bachelor of Science: First Major in Computer Science, Second Major in Mathematical Science

St. Louis, MO, USA

Aug. 2020 – May. 2024

- CS Major GPA: 3.98/4.00 | Overall GPA: 3.84/4.00

- Main Courses: Data-Driven Privacy and Security, Rapid Prototype Development and Creative Programming, Mobile Application Development, Web Development, Systems Software, Object-Oriented Software Development Laboratory

TECHNICAL EXPERIENCE

CambioML

Python developer Intern

San Jose, CA

Dec. 2023 – Mar. 2024

- Crawled metadata on 5000+ datasets from **AWS Data Exchange**, **Datarade**, and **Snowflake** using **selenium**, requests, and concurrent processing.
- Deployed an **LLM-powered search engine** using the **danswer** framework to help users query across different datasets.
- **Leveraged AWS Cloud Development Kit (CDK)** to automate provisioning of scalable search infrastructure, enabling consistent deployment across staging and prod

Web Search Engine: A full-stack distributed search platform with end-to-end custom infrastructure: crawler, indexer, PageRank, and web server (Java, multithreading, custom networking, distributed systems, RDD model, concurrent I/O).

1. Built **multithreaded web server** from scratch with custom routing, session management, and HTTP parsing.
2. Created custom **Key-Value Store (KVS)** with replication and partitioning logic for persistence and scaling.
3. Designed and implemented the **Flame framework** — an RDD-like distributed data processing layer supporting methods like flatMapToPair, join, reduceByKey.
4. Enabled job orchestration via **Coordinator** and **Worker** modules for KVS and Flame.
5. Developed **distributed crawler and indexer** to fetch and tokenize web pages.
6. Implemented a simplified **PageRank** algorithm across crawled data with parallel processing.

Washington University in St. Louis-

Lab Assistant, visual-assisted self-driving F1Tenth car

St. Louis, MO, USA

Aug. 2023 – May. 2024

- Enhanced perception systems for autonomous vehicles by optimizing machine learning training datasets, improving model reliability in challenging lighting conditions (strong glare/shadows) through targeted data augmentation techniques.
- Implemented **self-attention distillation**, reducing model convergence time by 20% without loss in accuracy
- Developed a **ROS driver** for SparkFun accelerometer enabling custom raw data processing.

Guwave Technology Co., Ltd.

Data Processing Intern

Shanghai, China

May 2023 – Aug. 2023

- **Designed and implemented a Python-based ETL pipeline** to process and unify heterogeneous data (CSV, Excel) from 10+ semiconductor clients.
- Developed **modular**, robust scripts with logging and exception handling, reducing processing time by 50%.
- Created a standardized schema to enable seamless integration with downstream analytics tools.

Black Sesame Technology Co., Ltd.

Toolchain Development Intern

Shanghai, China

Jun. 2022 – Jul. 2022

- Built a **shell-based** framework to test quantized neural networks across embedded devices.
- Added **concurrency**, MD5 verification, and wireless task delivery, enabling **scalable and automated deployment** across 5+ test devices.
- Aggregated test logs into summary charts for model evaluation and customer-facing reports.

PROJECTS

MasterCard Onboarding Automation: A full-stack web interface for collecting customer information with questionnaire transformable to datapoints in database.

Kinexus: WUSTL Med Research Application

1. Diagnosed and resolved critical data synchronization issues in an iOS health monitoring app that collected biometric data from Apple Watch and iPhones, eliminating intermittent data loss and upload latency
2. Refactored **serverless** APIs and optimized queries for AWS RDS, increasing success rate significantly.
3. Authored comprehensive technical documentation, including codebase walkthroughs and database schema diagrams, slashing onboarding time for new developers by 60%

SKILLS

Programming Languages: Python, Java, C++, JavaScript

Web & Backend: Express, React, REST api, Tornado

Cloud & DevOps: AWS, CDK, EC2, QuickSight, Postman, Shell Scripting

Databases: MySQL, SQLite, Snowflake

Infra & Distributed Systems: Concurrency, Flame (custom RDD), Crawler, Indexer, KVS

Other Tools & Systems: ROS