

SIRUI CHEN

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SUMMARY

Full-stack software engineer and University of Pennsylvania CIS M.S.E. candidate with a CS/Math B.S. and 3.98 CS GPA. Built React web apps, backend APIs, PostgreSQL data systems, distributed search infrastructure, OS components, and ML/NLP research pipelines. Strong in JavaScript, Python, Java, C/C++, React, Node.js/Express, PostgreSQL, AWS, Docker, and performance debugging. Focused on readable code, product workflows, scalable systems, and cross-functional execution. Work Authorization: green card.

EDUCATION

University of Pennsylvania Philadelphia, PA
M.S.E. in Computer and Information Science Aug. 2024 - May 2026 (Expected)

- Coursework: Internet and Web Systems, Database and Information Systems, Natural Language Processing, Machine Learning

Washington University in St. Louis St. Louis, MO
B.S. in Computer Science; Second Major in Mathematical Science Aug. 2020 - May 2024

- CS GPA: 3.98/4.00 | Overall GPA: 3.84/4.00 | Focus: full-stack development, systems, security, mobile apps, and OS labs

TECHNICAL EXPERIENCE

University of Pennsylvania May 2025 - Aug. 2025

Research Assistant under Prof. Chris Callison-Burch

- Built and evaluated retrieval-augmented generation workflows for DARPA SciFy and OpenScholar using score-based filtering, contrastive model work, and domain data preparation.
- Turned research goals into reusable scripts, datasets, and documentation so model and retriever changes could be tested consistently.

CambioML

Dec. 2023 - Mar. 2024

Python Developer Intern

- Built an LLM-powered data portal with Danswer AI to search datasets from AWS, Datarade, and Snowflake across ingestion, indexing, and user-facing discovery workflows.
- Wrote Python crawlers and cleaners for 5,000+ datasets; resolved metadata issues that affected search relevance and downstream data quality.
- Automated AWS search infrastructure with CDK and deployment scripts for reproducible development, testing, and release support.

Washington University in St. Louis

Aug. 2023 - May 2024

Lab Assistant, Vision-Assisted Self-Driving F1Tenth Car

- Improved model robustness in glare and shadow conditions through targeted data augmentation, experiment tracking, and evaluation.
- Built a ROS accelerometer driver for sensor integration and applied self-attention distillation to improve convergence speed by 20%.

Guwave Technology Co., Ltd.

May 2023 - Aug. 2023

Data Processing Intern

- Designed Python ETL modules and a unified schema for 10+ semiconductor clients, supporting analytics and reporting workflows.
- Reduced data processing time by 50% through modularization, stronger error handling, and reusable parsing logic.

Black Sesame Technology Co., Ltd.

Jun. 2022 - Jul. 2022

Toolchain Development Intern

- Built test automation for quantized neural networks on embedded systems, with MD5 checks, concurrent multi-device deployment, and structured client reports.

PROJECTS

SafeCommerce-LA | *React, PostgreSQL, Python, JWT, SQL optimization*

- Built a full-stack analytics app linking LA crime data with California retail sales records, with authenticated dashboards, maps, charts, filters, and CSV export.
- Designed PostgreSQL schema and optimized SQL with joins, subqueries/CTEs, aggregation, indexes, caching, and query restructuring; project earned 99/100.
- Supported user workflows for neighborhood risk analysis, sales trends, high-crime areas, and store-level reporting through reusable query endpoints.

Web Search Engine | *Java, concurrency, networking, distributed systems, custom KVS*

- Built an end-to-end distributed search platform with crawler, indexer, PageRank, multithreaded web server, replicated key-value store, and RDD-like Flame layer.
- Implemented custom networking, concurrent I/O, partitioning, replication, and distributed computation primitives across storage, compute, and serving layers.
- Debugged crawler, indexer, PageRank, storage, and server interactions end-to-end to improve reliability across the distributed pipeline.

PennOS | *C, operating systems, shell, scheduling*

- Implemented Unix-like OS features including shell commands, process scheduling, signal handling, file operations, and error-path testing in C.
- Wrote defensive systems code for process lifecycle and file-operation edge cases, with emphasis on predictable behavior under invalid input.

MasterCard Onboarding Automation | *React, backend APIs, structured forms*

- Built a full-stack onboarding tool with structured questionnaires, input validation, standardized submissions, and backend APIs for client intake.
- Modeled form responses as structured records so business users could review submissions and the workflow could be extended safely.

Kinexus - WUSTL Medical Research Application | *REST APIs, AWS RDS, documentation*

- Fixed Apple Watch sync issues, refactored APIs, optimized AWS RDS queries, and wrote developer docs that reduced onboarding time.
- Debugged data flow across wearable sync, backend services, and database queries while keeping the research app maintainable for future developers.

SKILLS

Languages: JavaScript, Python, Java, C/C++, SQL, Shell

Frontend & Product: React, UI workflows, structured forms, input validation, API integration, product debugging

Backend & Data: Node.js, Express, Tornado, REST APIs, PostgreSQL, MySQL, Snowflake, ETL, dashboards, query optimization

Cloud & Systems: AWS, AWS CDK, EC2, Docker, distributed systems, concurrency, networking, operating systems, ROS

Engineering Quality: testing, debugging, performance checks, documentation, maintainable code, reproducible scripts