Claire Chen

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Education

University of Illinois, Urbana Champaign **Expected Graduation:** May 2026

Mathematics and Computer Science, B.S. **Grade:** 4.0/4.0

Relevant Coursework: Systems Programming · **Distributed Systems** · Computer Architecture · Computer System Organization · Data Structures · Competitive Algorithmic Programming · Abstract Linear Algebra · Discrete Math · Complex Analysis · Real Analysis · Probability Theory

Experience

Parasol Lab @ UIUC *Researcher* Aug 2024 - Present

- Working under Professor Lawrence Rauchwerger to develop a distributed, open-source C++ library for robot task and motion planning, optimizing the C++ STL for **parallel** and **distributed** execution. Focusing on enhancing performance and scalability across **multi-core systems**, improving efficiency in complex robotic tasks.

CME Group *Software Engineer Intern* May 2024 - Aug 2024

- Implemented a new feature for the market data simulator NR to allow for realistic market data generation.
- Aggregated CAML-wrapped SBE binary marketdata and encoded/decoded messages with SBE/iLinkBinary protocols to maintain an orderbook and skew marketdata effectively; simulated traders with self prevention ids to place orders in NR.
- Streamed marketdata with **Kafka** and **Cloud Pub/Sub** and handled concurrency with a **ring buffer** to reduce contention.
- Reconciled incoming marketdata by keeping track of TOB orders and variable tick size instruments and increments.
- Utilized Java and Spring Boot for backend development, ran Cucumber and Mockito for integration testing and creating Mock servers and gateway endpoints, and **GKE GCP** for **cloud containerization and deployment**.

AMD — Disruption Lab *Software Engineer* Jan 2024 - May 2024

- Optimized AMD Mic performance by efficiently categorizing and removing unwanted noise leveraging DL algorithms.
- Constructed state-of-the-art audio separation model Sepformer in PyTorch on **AWS Sagemaker** to handle sources of different noise scales with reverberation and background noise.
- Ported PyTorch models into **ONNX** to run on AMD hardware.

A*Star *Software Engineer, Machine Learning Engineer* Aug 2023 - Jan 2024

- Allowed operators to use natural language to query unstructured information in a knowledge base of financial information for an AI Fintech startup.
- Enabled efficient context formation in conversations and the ability to recall past conversations with no context loss by constructing novel knowledge graphs; cross tested loss and accuracy by implementing LLMs for the same task.
- Implemented accurate detection of pages with useful tabular data and PDF parsing by leveraging GPT-4 and **Azure**.

UC Santa Barbara Vision Research Lab *Computer Vision Research Engineer* Jun 2023 - Aug 2023

- Conducted biomedical image analysis of distinguishing viral pneumonia COVID-19 from other forms of viral pneumonia through deep learning multi-class image classification.
- Innovated novel two layer stacked ensemble method incorporating transfer learning, hyperparameter tuning, image preprocessing, and ensemble learning that achieved 21.37% improved accuracy to baseline ResNet50.

Projects

Exchange Simulator *C++ · CMake*

- Built a stock exchange simulator in C++ following NASDAQ ITCH protocol optimizing **low latency** and **high throughput**.
- Ensured **thread safety** and minimized contention by using lock-free SPMC queue and atomic operations.
- Optimized matching engine to constant time order operations with no overhead and near constant best prices order search with good CPU cache locality by using preallocated data structures.

Technical Skills

Languages and Frameworks: C++ · Java · Python · MIPS Assembly · Go · SQL · Typescript · Verilog · Spring Boot · React

Development Tools and Platforms: Git · CMake · Kubernetes · Docker · Kafka · RabbitMQ · Maven · JUnit · Mockito

Cloud Tools: GKE/GCP · AWS · Supabase · Firebase · PyTorch · ONNX · Azure · Sagemaker