

Yuxuan Liu

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Education

University of Illinois Urbana-Champaign, Master of Computer Science (GPA 4.0/4.0)

Dec 2023

University of Wisconsin-Madison, B.S. in Computer Science & B.S. in Mathematics (GPA 3.72/4.0, 4 times Dean's List)

May 2017

Skills

- **Language:** Java, Python, JavaScript, C#, PHP, C++, C
- **Framework:** Spring Boot, Django, Flask, Spark, PyTorch, NumPy, ReactJS, .NET
- **Database:** MySQL, AWS DynamoDB, Aurora, Kinesis, Kafka, Apache Hive, Redis, Elasticsearch, AWS S3
- **Tool:** Docker, Kubernetes, Kibana, Git, SNS, SQS, Lambda, CloudFormation, Cypress, RSpec

Professional Experience

Senior Software Engineer - Test Automation, Spokeo, Los Angeles, CA

Feb 2024 - Present

Technology: Java, TypeScript, Ruby, ReactJS, MySQL, RDS Aurora, Redis, Docker, Kubernetes, Cypress, Cloud Infrastructure

- Designed and implemented an **automated end-to-end testing infra** to dynamically provision and manage testing hardware resources, manage and schedule executions, and process results data into dashboard reports, for a SaaS platform that manages people profiles across North America
- Defined and implemented the **system data model and schema** across test profile data and execution metadata, optimized **index strategy** on an RDS Aurora data store. Proposed and implemented a **low latency cache** for transient execution state based on Redis
- Researched, planned, and executed the **containerization** of test suites using Docker. Developed a **test runner provisioning engine** to support multiple browsers. Onboarded 7 different browsers including Chrome, Firefox, and Safari, covering **94%** of real site traffic
- Proposed and implemented the migration of core test suites into a **parallelized design**, leveraging Cypress Cloud with on-premises instances, reducing end-to-end test execution time by **70%**, and regression test effort by **200 hours per week**
- Designed and developed an **interactive web portal** for the test suite, which supports dashboards, test result analysis, configuration, and resource management features. Streamlined productivity beyond the legacy Cypress dashboard functionality, based on team and leadership input
- Developed new feature test suites using Cypress (TypeScript) and RSpec (Ruby), contributed to 2 high-quality product launches

Software Engineer Intern, SiriusXM, New York, NY

May 2023 - Aug 2023

Technology: Java, NodeJS, OpenSearch, Kibana, AWS Kinesis, Lambda, CloudWatch, CloudFormation, SNS

- Developed an **event-driven monitoring pipeline** for vehicle tracking APIs, reducing end-to-end propagation delay by **70%**, cloud monitoring costs by **95%**, and improving data freshness from **hours to minutes level SLA** compared to the legacy pull-based batch query execution
- Designed an AWS Kinesis stream based **ETL process** to clean, transform, and aggregate incoming log data into business insight, with a composable architecture for dynamically managing different types of data transformation logic contributed across teams
- Implemented a **serverless application** for loading and preprocessing uploaded records in S3 buckets using AWS Lambda and SNS
- Collaborated with PM and internal customers to develop **Kibana dashboards** to track API health statuses, developed analytics logic using KQL
- Successfully launched a Kibana dashboard to monitor all vehicle-driver mapping APIs across the company

Software Development Engineer (Full-Time), Amazon, Seattle, WA

July 2021 - July 2022

Technology: Java, Spring Boot, AWS RDS, DynamoDB, RESTful Microservices

- Developed **core payments back-end services** using Java and AWS, focusing on payment method management and payment processing
- Re-architected the Card Reader Registry Service into **extensible modular components** to support flexible config-driven customizations
- Decomposed the Card Reader Registry Service into multiple **RESTful microservices**, event processors, and metadata stores
- Designed and executed multiple payment processing integrations with Amazon's biometrics platform, across software and hardware
- Launched core business logic within the "Just Walk Out" experiment to enable new store openings for Amazon Go, Amazon Fresh, and Whole Foods Market, supporting payment requests over **10K+ TPS**, serving millions of retail customers worldwide

Software Engineer Intern, PerBlue Entertainment, Madison, WI

May 2020 - Aug 2020

- Developed and launched a mobile game monitoring and player management application using C#, Orleans Framework, and Unity

Software Engineer Intern, Baidu, Beijing, China

May 2019 - Aug 2019

Technology: JavaScript, PHP, MVC, Apache Hive, Redis, MySQL, HiveQL, DataX

- Designed and developed a **data pipeline** across a diverse data stack, which supports business intelligence for thousands of retailers nationwide
- Architected Hive data ingestion queries and schemas of MySQL presentation tables, also leveraged Redis for caching user requests
- Redesigning Hive **table partitioning strategy** and refactored HiveQL scripts to optimize load balance for compute cluster nodes, reducing the execution time of daily petabyte-scale data mining jobs from **10 hours to 3 hours**, while achieving a **40% decrease** in peak cluster usage
- Designed front-end **UX experience** for reporting users in collaboration with PM to provide interactive user controls for analyzing data
- Implemented web application business logic using MVC pattern in JavaScript and PHP, developed report drill-down, pivot, and analysis features

Software Engineer Intern, NavInfo, Beijing, China

May 2018 - Aug 2018

- Developed a Kalman filter based solution for reducing GPS signal noise in vehicle navigation systems using **Java**
- Implemented a route distance calculation service based on discrete coordinates stored in **HDFS** using **Hadoop** Java interfaces
- Optimized company-wide **Elasticsearch** instances used for Geoshape intersection determination, improving their accuracy

Project Experience

Computer Vision Course Project: [Android Weightlifting Form Correction App](#) - ([report](#), [video demo](#))

- Developed an **Android mobile app** that gives users real-time audio feedback for weightlifting, by processing live camera feed and IMU sensor data
- Implemented **client-server video streaming** using sockets, enabling the back-end computer vision model to perform 20+ inferences per second

Machine Learning Course Project: [Video Neural Style Transfer](#) - ([report](#))

- Designed a novel **video style transfer model** based on the Transformer architecture using **PyTorch** and **OpenCV**
- This model excels in terms of stylization quality, temporal consistency, and speed. Moreover, it supports input frames of arbitrary dimensions