

Rachel Heo

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SKILLS

Languages: C, C++, Python, JavaScript/TypeScript, HTML, CSS, Go, SQL, Solidity, Groovy, M3 Query

Frameworks/Libraries: React.js, Node.js, Express.js, TailwindCSS, Ethers.js, GraphQL, gRPC, Pandas, Flask

Tools: Arduino, Git, Postman, Protocol Buffers, MongoDB, MySQL, CircleCI, AWS, Docker, Kubernetes, Jenkins

EDUCATION

UNIVERSITY OF WATERLOO | Bachelor of Software Engineering

Waterloo, ON | Sept 2022 - Apr 2027

Relevant Courses: Databases (**SQL**), Operating Systems (**C++**), Compilers (**C**), Digital Computers (**Assembly**), Algorithms, Object Oriented Programming (**C++**), User Interfaces (**Javascript/Typescript**)

EXPERIENCE

UBER | Software Engineer Intern

San Francisco, CA | May 2025 - Aug 2025

- Built a reusable authentication challenge framework in **Golang**, abstracting MFA flows into a modular library adopted by **10+ services**, reducing integration effort by **40%** and standardizing reauthentication
- Implemented **fraud controls and rate-limiting** for OTP requests using contextual cooldowns and abuse detection signals, reducing spam traffic by **~25%** and saving an estimated **\$15K+/month** in SMS and voice OTP costs
- Instrumented monitoring and alerting using **M3 queries** and Uber's internal observability stack, surfacing metrics including challenge invocation volume, success/failure rates, fraud rejections, and latency

SONY INTERACTIVE ENTERTAINMENT | Software Engineer Intern

San Mateo, CA | Sept 2024 - Dec 2024

- Developed and owned a Jenkins agent maintenance job for **AWS EC2** instances, automating updates and cache management to **increase agent reliability** and **reduce build errors by 30%**
- Developed a **Node.js** tool to archive weekly telemetry snapshots in Artifactory, supporting historical analysis for **2,000+ annual builds**
- **Integrated telemetry into Groovy scripts** to monitor key metrics (rate, error, and duration) across 300+ Jenkins CI/CD pipelines, reducing incident response times by **25%**

AUGMENTA AI | Software Engineer Intern

Toronto, ON | Jan 2024 - Apr 2024

- Developed a high-load **MySQL stress testing CLI** in Go to evaluate server performance under extreme conditions, identifying bottlenecks and improving system scalability testing protocols
- Created a **domain records microservice** with MySQL and **gRPC**, achieving seamless inter-service communication
- Architected a queue processor using **AWS SQS** with long polling, message batching, and parallel processing techniques, optimizing high-volume request handling by **20%** while ensuring reliability and reducing bottlenecks
- Implemented system resilience features, including graceful shutdown, live/readiness probes, and health checks for 5 microservices in **Docker** and **Kubernetes**, **reducing downtime by 50%**

PROJECTS

UW BLUEPRINT (Volunteer management platform)

- Built UI components using **React.js**, **TypeScript**, and **ChakraUI** for a volunteer management platform, improving usability and engagement
- Developed and deployed **GraphQL mutations** in Flask for user and meal request workflows, achieving seamless data handling across **5+ key functionalities**
- Optimized **MongoDB** schemas and indexing strategies by analyzing query patterns, restructuring collections, and implementing compound and unique indexes, reducing query response time by **30%**

WORDSTORM (Brainstorming tool)

- Designed and developed a data-driven tool that extracts text from sources, leverages **SpaCy** and **Word2Vec** for NLP-based contextual analysis, and filters results with **NLTK** to generate precise, contextually relevant word lists
- Preprocessed large datasets with **BeautifulSoup** for model training, improving dataset quality and NLP fine-tuning