

# Zixiang(Zack) Hu

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## EXPERIENCE

### Fullstack Software Engineer

*D3 Security*

Vancouver, Feb. 2025 – Current

*TypeScript, c#, .NET, React, SQL Server*

- Modernized legacy .NET 4.8/ASPX web and mobile applications by architecting Next.js **PWA** solution within 5 months, delivering rapid release praised by **Disney** and **Intuit** as "most impressive product in 20 years".
- Migrated **.NET** backend to Node.js, refactoring SQL stored procedures into reusable utility functions.
- Optimized Entity Framework Core queries using eager loading and query splitting, reducing database round trips by 65% and improving response times from 800ms to 280ms
- Optimized PWA offline experience using **Servist** by implementing precaching strategies for pages and data, local cache fallbacks for offline requests, and background sync to execute queued requests once connectivity is restored.
- Implemented **concurrent editing** functionality using **SignalR** in **.NET** application, enabling real-time collaboration with editor presence indicators, and operational transformation for conflict resolution.
- Implemented **SAML SSO** integration with Okta for enterprise authentication.

### Fullstack Software Engineer

*Stealth Mode AI startup*

Vancouver, Apr. 2024 – Jan. 2025

*TypeScript, React, Node.js, Express*

- Enhanced application performance by implementing **React Suspense** and **lazy loading** with custom fallback components, resulting in a 30% reduction in **initial load time**.
- Designed and implemented a hybrid state management system using **Redux** and **Context API**.
- Created **reusable React custom hooks** (useDebounce, useLocalStorage) to standardize **state management** and optimize performance, resulting in 70% reduction in API calls and seamless data persistence across components.
- Implemented **Dependency Injection (DI)** and **Pub/Sub design patterns** to improve system architecture, resulting in enhanced code testability, maintainability and real-time event handling capabilities.
- Built a secure authentication system leveraging **OAuth 2.0** on the backend with **Node.js** and **Express.js**.
- DevOpsed with **Nginx**, **Docker**, **Jenkins**, **Shell** at **AWS EC2**, **RDS**, and **SES**, Tested with **Jest** in CI/CD

### Machine Learning Engineer

*Instage*

Vancouver, July. 2024 – Aug. 2024

*Python, Hugging Face, Whisper*

- Replaced the **Microsoft Azure Speech** API with a customized processing pipeline using **Whisper**, reducing **inference time by 31%** and **cutting per-query costs by 20%**.
- Researched and analyzed various speech-to-animation models, extensively documenting findings. Conducted a thorough feasibility analysis, detailing **inference latency** and **GPU resource consumption**.

## PROJECT

*CloudCart*

*Java, Spring Boot, Microservices, AWS, Kubernetes, Redis*

- Built a full-stack e-commerce platform using **Spring Boot** microservices deployed on **AWS EKS**, implementing user management, product catalog, order processing, and payment integration with clean REST APIs.
- Designed event-driven architecture using **message queues** and **Spring Cloud Stream** for asynchronous order processing, ensuring data consistency across microservices with proper error handling and retry mechanisms.
- Integrated **AWS Rekognition** for automatic product image tagging and **Comprehend** for sentiment analysis on product reviews, demonstrating practical AI/ML integration in Java applications.
- Implemented distributed caching strategy using **Redis** and optimized database queries with **JPA** eager loading, reducing average API response times from 500ms to 150ms.
- Built CI/CD pipeline using **GitHub Actions** for automated testing and deployment, with **Infrastructure as Code** templates for reproducible environment provisioning.

## EDUCATION

### Northeastern University

*Master of Science in Computer Science (GPA 4.0)*

Vancouver, Canada

*Sep. 2023 – Dec. 2024*

### University of Nottingham

*BSc (Hons) Computer Science with Artificial Intelligence (GPA 3.91 / 4.0, ranked 2nd)*

Nottingham, UK

*Sep. 2019 – Jul. 2023*