

# CHENRUI(ERIC) HAO

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## Professional Summary

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Innovative Fullstack Engineer specializing in ReactJS and Ruby, with expertise in Python, Rails, and JavaScript backend development. Skilled in building automated test suites and thriving in cloud-native environments. Quick to learn and adapt to new technologies, backed by a strong high-tech background. Exceptional communicator and collaborator, committed to delivering scalable, high-quality software solutions.

## Education

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**McMaster University, Faculty of Engineering**

Sep. 2020 – May 2025

*Bachelor of Science in Computer Science*

*Hamilton, Ontario*

## Technical Skills

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**Languages:** Ruby, Python, Java, C, HTML/CSS, JavaScript, TypeScript, C++, C#, No-SQL, SQL, GraphQL

**Frameworks:** Ruby on Rails, Flask, React, Django, Node.js, Express.js, Next.js, Redux, REST APIS

**Databases:** MySQL DB, MSSQL Server, MongoDB, Redis, Elastic Search, Snowflake, BigQuery

**Big Data/BI:** PowerBI, Databricks, PySpark, Hadoop, Apache Kafka, Scikit-Learn, TensorFlow, LangChain

**DevOps:** Git, Docker, Kubernetes, Terraform, IBM Cloud, Google Cloud Platform, AWS, Microsoft Azure

## Experience

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**Full-Stack Developer**

May 2023 - August 2024

*IBM Canada Limited, Skills Network*

*Markham, Ontario*

- Enhanced user interaction and visual design by upgrading the portal's UI/UX with Ruby on Rails and Tailwind CSS, leading to a 30% increase in user satisfaction and a 45% rise in engagement.
- Collaborated closely with the authors team to address issues encountered on the authoring platform, providing solutions and enhancements that improved their workflow and satisfaction.
- Architected a scalable file storage system using IBM Cloud OBS, streamlining digital asset management for authors, reducing load times by 50% and increasing system efficiency by 40%.
- Engineered and maintained a custom Markdown editor using React, providing authors with a tailored tool that streamlined content creation workflows and increased their productivity by over 60%.
- Developed an advanced video subtitle (SRT) generation system as a Flask backend API using Python and Whisper AI, enhancing multimedia accessibility with 98% subtitle accuracy.
- Led major system migration projects, optimizing resource allocation and enhancing team efficiency, which reduced course creation time by over 75% and improved operational effectiveness.
- Developed a dedicated digital asset management interface using React, streamlining file uploads and link retrieval processes, which improved operational efficiency by 40% and reduced file management time by 50%.
- Enhanced backend performance by designing and improving system architecture with advanced algorithms and data structures, achieving a 50% improvement in response times and a 30% reduction in server costs.
- Assisted other developer teams in building automation tools using our website API, fostering inter-team collaboration and accelerating development processes.
- Mentored and assisted new interns during onboarding, providing guidance on our system architecture and development practices, facilitating a smooth integration into the team.

**Software Developer Intern**

May 2022 – August 2022

*Shanxi Xinghua Cun Fenjiu International Trade Limited Co*

*TaiYuan, ShanXi, China*

- Developed software solutions for internal and external customers using Java, delivering high-quality code with excellent attention to detail.
- Collaborated with cross-functional teams to define project requirements and ensure solutions met business needs.
- Utilized Agile methodologies to drive project development, contributing to all stages of the software development life cycle.
- Participated in code reviews with senior developers, gaining valuable experience in object-oriented programming and design patterns.
- Contributed to test-driven development practices, creating automated test cases for Java-based applications.
- Improved code efficiency by optimizing algorithms and implementing advanced data structures.
- Successfully delivered Java-based solutions on time and within budget constraints, earning positive feedback from stakeholders.

- Developed and maintained technical documentation, ensuring easy knowledge transfer for future development efforts. Collaborated with three product and design teams to implement innovative solutions for product direction.

## Web Developer Intern

May 2021 – August 2021

Jinneng Holding Group

JimCheng, ShanXi, China

- Worked with a team of 12 to build and maintain web applications that scaled to 0.6M daily users, communicating with cross-functional teams regarding product design and release.
- Developed new React components for the user-facing web application, improving the time-on-page for the average user by 1.2 minutes.
- Volunteered to investigate slow performance issues in the backend relational database system, and made improvements based on my research to speed up the database query by 29%.
- Implemented cross-browser testing for web applications to ensure performance and visual quality.
- Built out a unit testing infrastructure for a client application that reduced the number of bugs reported by 33%.
- Used established coding standards and methodologies and coached two newly joined interns on best practices.

## Projects

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### Gin Rummy, With a Twist | *SpringBoot, PostgreSQL, Next.js, Redux, WebSockets, shadcn/ui* September 2024 - Now

- Led a team to develop a full-stack web-based Gin Rummy game using the dozenal (base-12) number system, demonstrating strong team management and coordination skills.
- Implemented the backend with SpringBoot and PostgreSQL, managing critical game logic, user authentication, session tracking, and real-time multiplayer synchronization via RESTful APIs and WebSocket communication.
- Developed the frontend using Next.js, shadcn/ui, and Redux, creating an intuitive user interface with smooth animations for card dealing, sorting, and discarding, enhancing user experience.
- Integrated frontend and backend components to ensure seamless communication and data consistency, optimizing performance for scalability to support multiple concurrent users.
- Established an admin system allowing administrators to modify card images, game table styles, and adjust game rules, showcasing full-stack development capabilities.
- Coordinated agile development methodologies, set project milestones, and facilitated communication between team members, resulting in on-time delivery of project objectives.
- Implemented a dynamic leaderboard and scoring system utilizing the dozenal number base logic, efficiently storing game data in PostgreSQL.
- Managed state with Redux to handle player hands, the deck, the game board, and real-time updates of player moves, ensuring a responsive and engaging gameplay experience.

### Lychee Nutrition App | *Python, Django, LangChain, IBM Cloud*

May 2023 – September 2024

- Developed and optimized the backend infrastructure for a nutrition-focused application using Python, Django framework, LangChain, and IBM Cloud, ensuring robust performance and scalability.
- Fine-tuned a large language model using Retrieval-Augmented Generation (RAG), enabling precise and context-aware querying within nutrition knowledge bases, significantly improving the application's informational accuracy and user satisfaction.
- Engineered RESTful APIs to facilitate seamless communication between the frontend and backend, supporting efficient data retrieval and manipulation for enhanced user interactions.
- Leveraged advanced natural language processing (NLP) techniques to adapt the large language model for extracting relevant information and generating concise summaries from user interactions, thereby improving response clarity and relevance.
- Implemented sophisticated pattern matching using regular expressions to convert complex data structures into JSON format, optimizing data processing workflows and storage solutions.
- Collaborated with cross-functional teams, including data scientists and UX/UI designers, to integrate advanced machine learning models, enhancing user engagement and enabling personalized content delivery.
- Participated in an incubator interview to present the application's innovative use of machine learning and advanced algorithms, showcasing its potential for growth and scalability within the health and wellness sector.

### Full Stack Book Review Website | *MySQL, AWS RDS, React, Python, AWS S3*

November 2022 - January 2023

- Designed and developed a full-stack book review website utilizing MySQL, AWS RDS, and React to enable efficient data storage, retrieval, and a user-friendly interface.
- Cleaned and preprocessed 2 million Amazon book data files using Python, creating ER diagrams and normalizing relations to BCNF for optimal database design.
- Developed a responsive web application that allowed users to search and access detailed book information, featuring a recommendation system based on authors and genres.
- Utilized AWS S3 for efficient storage and retrieval of images and media files related to the books.
- Implemented agile development methodologies to meet project milestones on time, collaborating with a team to deliver a high-quality product.
- Demonstrated proficiency in database management and web development, delivering an application that provided a seamless user experience.