

Chuan Liu

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SKILLS

- Programming: Java, Python, C/C++, SQL, JavaScript, HTML, CSS, C#, Shell, R.
- Frameworks: Spring, Spring Boot, Node.js, Flask, React.js, Flutter.
- Database: Redis, MySQL, PostgreSQL.
- Tools: Git, Docker, Postman, Jira, Figma.

EDUCATION

University of Toronto

09/2020 – 11/2024

B.Sc. in Computer Science & Statistic (Honors Degree)

- Relevant Course: Software Design, Computer Organization, Data Structures, Algorithms, Database Systems, Machine Learning, Deep Learning, Probability.

WORK EXPERIENCES

Apple

06/2023 – 09/2023

Backend Software Development Engineer Intern

- Refactored an internal sales tracking CRM using **Java** and **SpringBoot**, adding a 4th "view-object" layer for enhanced data security, limiting sensitive exposure in **JSON** output when interacting with **JPA** connections. Created API connection for data filtering, providing different data views based on user login permissions.
- Designed and developed a sales incentive program with **Python**. Integrated various algorithms to calculate sales performance and implement a reward/penalty system based on 13-week rolling sales data. Handled big-data processing of up to one million data points with **Pandas**, optimizing runtime performance through **multithreading** with priority and time-based FIFO caching, reducing runtime by 66%, from 45 minutes to 14 minutes.
- Collaborated within a team of 11 in an **Agile** environment, actively participating in daily scrums to build rapport, resolve conflicts, and ensure effective communication with cross-functional teams, including Product Management and Database teams. Facilitated clarification of API requirements and maintained project alignment.

SELECTED PROJECTS

Full-stack Development of Web-based Anonymous Social App

- Employed **SpringBoot**, **MySQL**, and **Redis** to develop and optimize a secure backend platform, which supported concurrent requests and low-latency operations for enhanced system responses.
- Built a responsive user interface with Flutter, ensuring seamless user experience across devices.
- Implemented advanced security protocols with **JSON Web Tokens**, **HTTPS**, **TLS**, and **Role-Based Access Control** for secured authentication and data protection.

Implementation of Database Management System

- Designed and developed **PostgreSQL** databases for a student grading platform and a recording studio management system, ensuring efficient data organization and integrity.
- Created complex relational data models for enhanced data management and usability.
- Optimized query performance with indexing, normalization, and strategic joins, which ensured real-time reliable access to large datasets and supported data-informed decision-making.

Analysis Neural Network and Deep Learning Models

- Utilized **TensorFlow** and **Pytorch** to implement sophisticated neural network architectures for handwriting recognition and text classification experiment tasks, including **K-Nearest Neighbors**, **Convolutional Neural Networks**, and **Recurrent Neural Networks**.
- Optimized model performance and training process through **hyperparameter tuning** (learning rates, batch sizes, layers), **regularization** (dropout, L2), and transfer learning with pre-trained models.
- Evaluated different models' performance with metrics covering precision, recall, and F1-score in iterative tests and refinement, enhancing model robustness and aligning with task objectives.