

ERICA (XUAN) HE

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[Portfolio Website](#) ◇ [LinkedIn](#) ◇ [GitHub](#)

SKILLS

Languages: C++/C, Java, JavaScript, Node.js, Python, SQL, MongoDB, HTML, CSS, System Verilog, ARMx64
Tools React, REST API, Bootstrap, PostgreSQL, jQuery, EJS, Android Studio, Git, GDB, Postman

EDUCATION

University of British Columbia Expected May 2026
Bachelor of Applied Science - Computer Engineering
Relevant Coursework: Java OOP, D.S. & Algorithm C++, Operating System, Computer Network, Database Design

ENGINEERING STUDENT TEAM

Software Member - Pianobot Sep 2022 - Nov 2023
UBC Open Robotics

- Developed a translation system in C++ and Python to convert MIDI files into precise data sequences representing robot hand positions and keyboard finger pressing states over time.
- Implemented comprehensive unit testing and regression testing protocols to validate system functionality

PROJECTS

Chatting App

- Developed Single-page Application with JavaScript and Node.js, following MVC pattern. Ensured robust security by managing user sessions and storing chats securely in MongoDB. Implemented dynamic message retrieval and fortified against XSS attacks.
- Incorporated AI capabilities with GPT-3.5 for emotive analysis, enhancing user engagement by dynamically suggesting memes.

Reliable UDP

- Achieved precise data replication at the receiver and sustained over 70% bandwidth utilization in steady-state conditions using udp (SOCK_DGRAM) in C.
- Implemented tcp-zeno congestion control and flow control via a sliding window mechanism.
- Ensured fair link sharing among competing instances within 100 RTTs and maintained TCP-friendliness.

Wildfire Detection Module

- Coordinated 7 sensor data collection using a Python microcontroller and achieved efficient data transmission to a remote PHP server via TCP sockets.
- Implemented a dynamic React frontend to provide real-time visualization and analysis of environmental data.

Grocery Shopping Web App

- Utilized Node.js and React with REST API integration to create an engaging grocery shopping application featuring user login, personalized shopping carts, and dynamic product recommendations.
- Designed and optimized a highly normalized Oracle SQL database, adhering to BCNF, encompassing 7 entities with intricate relationships, including weak entities and ISA hierarchies.

Pub-Sub with Twitter

- Developed a Java program interfacing with the Twitter API, enabling users to efficiently manage and retrieve unread Tweets.
- Implemented a 5-minute data caching system to enhance performance and augment performance and by employing thread-safe locking mechanisms.