BELLA HUANG

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EDUCATION

University of Toronto — Toronto, ON
BASc. in Computer Engineering — *Sep. 2020 – May 2025*
Coursework: Algorithms & Data Structures, Software Communications & Design, Operating Systems, Software Engineering, Databases, Computer Networks, Computer Organization, Digital Systems, Deep Learning, Machine Learning, Computer Security

TECHNICAL SKILLS

Languages: C, C++, Python, Perl, JavaScript, TypeScript, SQL, Lua, MATLAB, Verilog, ARM Assembly
Web Technologies: HTML, CSS, React.js, Node.js, Flask, Express.js, Next.js, Bootstrap, Tailwind, jQuery, Material-UI
Developer Tools: Git, GitHub, Figma, Docker, Linux, Perforce, ClearCase, AWS, GCP, GraphQL, Cypress, Jest, Sentry, Jenkins

EXPERIENCES

Technical Co-Founder/Software Lead — Dec 2023 – Present
Aiko Translations — *Toronto, ON*
- Led the software development of a streaming speech-to-speech translation device for senior homes, building a server hosting **OpenAI Whisper** on NVIDIA Jetson, integrating **FastAPI** and Google Cloud Translation API
- Established an interactive transcription interface with live updates by leveraging Flask, Websockets, and React.js, enabling multilingual support with language detection and translation across **130+ languages**
- Conducting ongoing user testing sessions at **4 senior homes**, working closely with a cross-functional team in a high-paced setting to refine the device specifications based on feedback collected from caregivers and residents

Display Systems Engineering Intern (Performance Team) — Jun 2023 – Aug 2024
Qualcomm — *Markham, ON*
- Developed a new testing framework with CMake build automation, capable of executing 1000+ tests within 10s to validate the Display Processing Unit's image resizing performance, along with a custom GUI for real-time monitoring of test results
- Achieved a **11% increase in time efficiency** and a **40% increase in CPU efficiency** by implementing buffering with STL libraries and using GDB to resolve memory leaks, optimizing visual data processing for image pixel manipulation
- Engineered from scratch a custom guard architecture for ClearCase to block faulty code deliveries, streamlining the **CI/CD pipeline** by eliminating **100%** of post-deployment issues arising from problematic builds
- Leveraged Python and Perl shell scripting to automate the cleanup of namespace pollution across **500+ files** and standardized custom types across **3000+ files**, enhancing code maintainability and cross-platform compatibility

Software Developer — Apr 2022 – Aug 2024
You're Next Career Network (YNCN) — *Toronto, ON*
- Launched and enhanced the search & filter system of an interactive mobile mapping application of the YNCN Career Fair venue, assisting **3400+ students** in navigating to **65+ company booths** at 5 career fairs
- Implemented a database and user authentication system for an event management platform using **AWS RDS** and **Firebase**, eliminating reliance on third-party services like EventBrite and Google Forms, **reducing cost to $0**
- Revamped and maintained YNCN's website, resulting in a **28% rise** in annual visits, reaching **3500+ users**
- Mentored **7 junior developers** on understanding the organization codebase, software architecture, and workflow

Software Development Intern — May 2022 – Sep 2022
Xanadu Quantum Technologies — *Toronto, ON*
- Enhanced core functionality of 3 major platforms on the Xanadu Cloud team through **fullstack** development, integrating robust new features and ensuring secure error handling and graceful failure mechanisms to improve system reliability
- Achieved **90+%** test coverage with comprehensive **end-to-end testing**, proactively identifying and resolving critical bugs

PROJECTS

Kendo Tournament Management Platform — Aug 2024 – Present
- Initiated and established partnership with the UofT Kendo Club to develop a tournament manager for the annual UofT Tournament hosting **300+ participants**, featuring automated bracket generation with built-in UI for scorekeeping
- Designing the UI prototype in **Figma** and developing the system architecture with JavaScript, Node.js, and Express.js to reduce bracket creation time from 20+ hours to minutes, streamline tournament planning, and centralize historical data

Sorting Algorithms Visualizer — Jan 2022 – Jul 2023
- Constructed an innovative web application showcasing **5 sorting algorithms**, featuring **real-time animations** that illustrated the step-by-step executions of each algorithm while detailing space and time complexities

Recipe Recommendation Generator (Team of 4) — Jan 2023 – May 2023
- Built a recipe generator model using **PyTorch**, leveraging **CNN + AlexNet** to achieve 75% test accuracy in classifying input images and generating tailored recipe recommendations, surpassing the Random Forest baseline by 14%
- Optimized the image preprocessing pipeline, accelerating model training time by **33%** and enhancing model output relevancy