BEN ZHOU

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EDUCATION

University of Waterloo   Anticipated Sep 2024 – Apr 2029
Candidate for BASc in Computer Engineering, Honours   *Waterloo, Ontario*

EXPERIENCE

Prototype Engineering Intern   Jul 2024 – Aug 2024
Averroes Technologies   *Toronto, Ontario*
- Developed **12** diverse firmware and hardware prototypes, utilizing **C++** and **Python** to iteratively test, validate, and optimize core product functionalities.
- Soldered and assembled multiple custom circuits on a perforated board to successfully demonstrate proof of concept, ensuring the compatibility and reliability of **5+** different modules.

Innovation Developer Co-op Student   Feb 2024 – Jul 2024
SAP Toronto   *Toronto, Ontario*
- Developed a Cloudflare worker to handle and sanitize GPT-4 requests using **TypeScript**, and implemented comprehensive tests to achieve **100% coverage**.
- Wrote multiple scripts in **Python** and **Node.js** to efficiently parse and clean **248,000+** rows of data, imputing values, and ensuring data integrity for future use.
- Built a personalized diagnosis tool leveraging **SAP BTP**, integrated with **Firestore** for database management and **Firebase Authentication** for secure user access.

FullStack Development Lead   Nov 2023 – May 2024
EurekaHacks 2024   *Oakville, Ontario*
- Led a team of three to build a modern, responsive website using **Next.js** that managed registrations, securing a max event capacity of **300 sign-ups** a month before the event.
- Enhanced SEO strategies by optimizing metadata, improving page load times, and reducing LCP, leading to a **3,800+ increase in impressions** and **1,100+ clicks**, significantly boosting site visibility.

Programming Instructor   Sep 2023 – Sep 2024
Triway Education   *Stouffville, Ontario*
- Taught a comprehensive curriculum of 18 lessons to enhance programming skills in **Java** and **Python**.
- Provided personalized tutoring to students preparing for the AP Computer Science A (AP CSA) exam.

PROJECTS

Spotify Macrokeyboard | GitHub | *C++, TypeScript, ESP32, PCB*   Feb 2024 – Jun 2024
- Created a custom macro keyboard featuring an OLED display, mechanical switches, custom 3D-printed keycaps, and RGB lighting, synchronized with Spotify to control playback and display album artwork colours.
- Fabricated and soldered a **PCB** and a **3D chassis** to house the project, complete with 2 layers and through-hole mounting, integrated with RGB strips.
- Implemented an API in **TypeScript** to manage Spotify states, and rewrote a library in **C++** for faster processing.

UniPlanner - 1st Place @HDSBHacks | GitHub | *Next.js, Prisma, Tailwind, TS, Mongo*   May 2023 – Present
- Leverage server-side rendering and caching strategies in **Next.js** to optimize server performance.
- Implementing full authentication system third-party services, along with a secure payment system using JWT.
- Used **Prisma** to design efficient **MongoDB schemas**, enhancing data integrity and improving query performance.

FlashNotes - 3rd Place @HackTheRidge 2024 | GitHub | *TypeScript, Next.js, Tailwind*   Dec 2023
- Developed a website using **Next.js** that converts images of notes into studyable flashcard sets.
- Integrated OpenAI's vision model with OCR technology for seamless image-to-text conversion.

bTagScript Playground | Project | *Flask, Python, HTML, CSS, JavaScript, MySQL*   Jan 2022 – May 2023
- Designed a **Flask API** to serve program run requests while also logging data through **MySQL**.
- Helped debug **14,350+ programs**, and recently migrated to a new host to ensure **99.95%** uptime for all users.

TECHNICAL SKILLS

Languages: TypeScript, JavaScript, HTML, CSS, C++, Python, Java, SQL (Sqlite, MySQL), Bash
Technologies: Next.js, React, Node, Flask, MongoDB, Redis, Tailwind, framer-motion, ESP32, Arduino, Raspberry Pi
Developer Tools/Skills: Git, GCP, Oracle, Linux, Soldering, PCB Design, 3D Printing