

# Ruoyu (Ben) Zhou

benz16107@gmail.com | 778-680-9189 | [linkedin.com/in/-ben-zhou-](https://www.linkedin.com/in/-ben-zhou-) | [github.com/benz16107](https://github.com/benz16107)

## EDUCATION

University of Toronto, St. George — B.Sc. Computer Science & Finance/Economics

Expected June 2028

Cumulative GPA: 3.7 / 4.0

## SKILLS

**Languages:** Python, Java, JavaScript, TypeScript, C++, SQL, Dart, HTML/CSS, Bash.

**Frameworks & Libraries:** React, Next.js, Node.js, FastAPI, Flutter, REST APIs, PyTest, Jest, ROS, PyTorch.

**Tools & Platforms:** Git, GitHub, Docker, Linux, PostgreSQL, MongoDB, CI/CD, Agile, Arduino, Figma, SolidWorks, MATLAB.

**Concepts:** Data Structures, Algorithms, Object-Oriented Programming, Unit Testing, System Design, RESTful APIs.

## PROJECTS

**Blindspot — Navigation & Object Detection App for the Visually Impaired** | [GitHub](#)

February 2026

*Flutter, Dart, LiveKit, Gemini API, Google Maps API, ElevenLabs*

- Built a cross-platform Flutter app (iOS/Android) delivering hands-free walking navigation for blind and low-vision users, with sub-2s spoken obstacle alerts from live camera input.
- Engineered a real-time voice-agent pipeline with LiveKit and Backboard, streaming bidirectional audio and sensor context at low latency for conversational guidance.
- Designed an obstacle-detection loop querying Gemini vision with structured JSON outputs, triggering haptic and audio alerts; integrated Google Maps routing and ElevenLabs STT/TTS for end-to-end turn-by-turn navigation.

**DataFrame — Visual AI Workflow Builder** | [GitHub](#) | [Website](#)

February 2026

*React, TypeScript, FastAPI, Pyodide, CodeMirror, tldraw, Gemini API*

- Built a full-stack visual workflow platform letting users compose and execute node-based data/AI pipelines on an interactive canvas (React + TypeScript frontend, FastAPI backend).
- Engineered a custom graph editor on tldraw with a modular node/port architecture (code, math, conditional, plotting, file input, Gemini, external data) and dependency-aware topological execution.
- Implemented in-browser Python execution with Pyodide and CodeMirror for dynamic multi-input/multi-output code nodes, and integrated Gemini LLM nodes with structured I/O schemas and multimodal file support.

**Context-Based Captioning System — UofT Trustworthy Machine Intelligence** | [GitHub](#)

Sept 2025 – Present

*Python, PyTorch, Hugging Face, OpenAI Whisper, Google Colab*

- Fine-tuned the OpenAI Whisper encoder-decoder transformer for lecture speech recognition, producing timestamped transcripts with per-token confidence scores to improve accessibility.
- Built an end-to-end ASR pipeline processing live microphone audio through the fine-tuned model to generate real-time captions and post-lecture corrected transcripts, collaborating cross-functionally via Hugging Face, Colab Pro, and GitHub.

## EXPERIENCE

**University of Toronto Autonomous Scale Racing (UTASR)**

Sept 2025 – Present

*Firmware and Design Team Member*

*Toronto, ON*

- Wrote C++ firmware for NVIDIA Jetson and Arduino platforms, interfacing with IMU, encoder, and actuator sensors over UART/SPI/I2C for real-time data acquisition and low-level vehicle control.
- Performed hardware-firmware integration testing with ROS, validating stable inter-process communication across vehicle control stacks before track deployment.
- Designed CAD models and assemblies in SolidWorks for chassis components, ensuring precise tolerances and compatibility with electronic hardware and drivetrain subsystems.

**Canadian University Software Engineering Conference (CUSEC)**

Sept 2025 – Present

*Director of UI/UX*

*Toronto, ON*

- Lead UI/UX design for CUSEC's attendee-facing web and digital experiences, producing wireframes with Figma, mockups, and interface flows for a national student-led software engineering conference.
- Collaborate cross-functionally with technology, promotions, logistics, and sponsorship teams to align branding, sponsor visibility, and event information across digital touchpoints.
- Drive design review and developer handoff, improving usability, content hierarchy, and visual consistency for students, speakers, sponsors, and organizers.

## ADDITIONAL

**Hackathons:** 9x winner, 2x organizer, 15+ attended. **Languages:** English & Mandarin Chinese (native), French (limited).

**Volunteer:** Led media production for non-profits; co-raised over \$20,000 CAD for homeless support in Vancouver, BC.