

Boshen Lin

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EDUCATION

University of Alberta

Bachelor of Science in Computing Science (Honors)

Edmonton, AB

Sept. 2021 – May 2026

- **Relevant Coursework:** Compilers, Operating Systems, Algorithms, Machine Learning, Database Systems, Software Engineering

EXPERIENCE

Software Developer

Oct. 2025 – Present

University of Alberta – Civil & Environmental Engineering

Edmonton, AB

- Architected Android app for real-time physiological sensor visualization, streaming data from EmotiBit (ESP32) via UDP/TCP at 50–200 Hz with sub-100ms latency.
- Engineered Kotlin rendering pipeline for 5-channel biosignal display (EDA, PPG, accelerometer, gyroscope, temperature) with dynamic scaling and synchronized timestamps.
- Achieved 99.2% signal fidelity compared to desktop reference implementation through optimized packet parsing and buffer management.

Software Developer

Dec. 2024 – Oct. 2025

So Shall We.co

Edmonton, AB

- Shipped full-stack analytics platform (React/TypeScript, Node.js) processing 500K+ daily ad metrics from Google Ads, Meta Ads, and GA4 APIs.
- Designed ETL pipeline with automated data validation, reducing manual reporting time by 85% for 3 marketing teams.
- Containerized application with Docker and deployed CI/CD via GitHub Actions, achieving 99.5% pipeline reliability.
- Implemented AWS S3 storage architecture handling 2GB+ daily data ingestion with automatic partitioning.

Software Developer

May 2024 – Sept. 2024

University of Alberta – Civil & Environmental Engineering

Edmonton, AB

- Built Android application analyzing 10,000+ physiological data points from wearable sensors to identify urban stress hotspots using RMSSD heart-rate variability analysis.
- Implemented KDE-based heatmap visualization on Google Maps, achieving 92% detection accuracy in field trials with 50+ participants.
- Delivered production system adopted by City of Edmonton officials for evidence-based urban planning decisions.

Software Engineer Intern

May 2023 – Sept. 2023

Leettle Mint LLC

Pittsburgh, PA

- Developed Vue 3 SPA with real-time financial data visualization, serving 1,000+ daily active users.
- Optimized MongoDB queries with compound indexing and caching layer, reducing API latency by 50%.
- Implemented RESTful backend supporting 100+ concurrent connections with pagination and rate limiting.

PROJECTS

Gazprea Compiler | C++, ANTLR, MLIR

- Built complete compiler toolchain: lexer, parser, semantic analyzer, and MLIR code generator for custom language with 50+ grammar rules.
- Implemented type inference system with scoped symbol tables supporting user-defined types, functions, and short-circuit evaluation.
- Generated optimized MLIR with SSA form, supporting arithmetic, control flow, memory operations, and function inlining.

Generative Models Benchmark Suite | PyTorch, CUDA

- Implemented VAE, DDPM, DDIM, and Latent Diffusion models from scratch; benchmarked on FashionMNIST with FID, SSIM, and MSE metrics.

- Achieved 2.3x training speedup using mixed precision (AMP), EMA weights, and cosine noise scheduling.
- Built experiment tracking pipeline with Weights & Biases for hyperparameter optimization across 100+ runs.

Crane Path Optimization System | *Python, NumPy, SciPy*

- Developed multi-objective optimization algorithm for construction crane path planning; **published as first author at CSCE 2025**.
- Reduced search complexity by 97% (nodes) and 98.6% (iterations) through spherical coordinate transformation and domain-specific pruning.
- Validated against 5 real modular construction site layouts with collision-free path generation.

TECHNICAL SKILLS

Languages: Python, TypeScript, JavaScript, Kotlin, C++, Java, Go, Rust, C#, SQL

Frameworks: React, Vue 3, Node.js, Django, Express, Android SDK, PyTorch

Infrastructure: AWS (S3, EC2), Docker, GitHub Actions, Firebase, MongoDB, PostgreSQL, Google Cloud

Tools: Git, Linux, Vim, Android Studio, Playwright, Pandas, NumPy

AWARDS & LANGUAGES

Awards: International Student Scholarship (2021–2023), UAlberta Undergraduate Leadership Award (2023), Top 25% Canadian Senior Math Contest (2021)

Languages: English (Proficient), Cantonese (Native), Mandarin Chinese (Native)