JOSHUA DEBELE

Calgary, AB

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Education

Schulich School of Engineering, University of Calgary   **Aug. 2025**
B.Sc. Software Engineering   *Calgary, AB*

Technical Skills

Languages: Python, Java, JavaScript/TypeScript, SQL, C++, Flutter
Backend & Full-Stack: React/Next.js, REST APIs, PostgreSQL, MySQL, CI/CD with GitHub Actions
Cloud/Infrastructure: Docker, AWS, GCP, Linux, Kubernetes, Terraform
Machine Learning/AI: PyTorch, TensorFlow/Keras, NumPy, SciPy, OpenCV; model training, benchmarking, optimization
Other: Testing, Debugging, Networking fundamentals

Experience

NSERC USRA — Research Assistant   **May 2025 – Aug. 2025**
University of Calgary   *Calgary, AB*
- Built a V2X edge-computing pipeline that splits YOLOv5 across vehicles/RSUs to reduce end-to-end inference delay
- Implemented a two-stage optimizer (group knapsack + convex allocation) for RSU compute (alpha) & bandwidth (beta); added a GA-based split-point search to produce per-slot optimal plans
- Productionized Python modules (`dnn_split_singleframe.py` and orchestrator) with structured logging, unit tests, and CI; scripted reproducible experiments with timing/throughput instrumentation
- Analyzed compute/throughput tradeoffs; delivered weekly reports and reviews with Dr. Huaqing Wu & Zheng Liu

Coding Instructor   **Sep. 2023 – May 2025**
Code Ninjas   *Chestermere, AB*
- Taught 1:1 and small-group sessions from Scratch to JavaScript & Unity; created lesson assets that improved learner progression
- Guided students through project milestones; documented progress and coached debugging best practices

E-learning & Web Development Intern   **May 2022 – Aug. 2022**
The Immigrant Education Society (TIES)   *Calgary, AB*
- Shipped a resume-builder web app (JS/HTML/CSS); improved LMS reliability by reducing CSS regressions and bugs
- Standardized CSS and added tests (Git + PR reviews), improving maintainability and user experience

Projects

V2X DNN Split Optimizer | *Python (NumPy/SciPy), GA, YOLOv5*   **May 2025 - Aug. 2025**
- Engineered an edge **V2X pipeline** that partitions YOLOv5 across vehicles and roadside units (RSUs) to reduce real-time inference delay
- Designed a **two-stage optimizer**: group-knapsack selection + convex resource allocation for RSU compute (α) and uplink bandwidth (β); integrated a **GA-based split-layer search** to output per-slot optimal plans under dynamic loads
- Validated with **reproducible experiments** (CI, timing, throughput) on **YOLOv5 (7 layers)** under realistic compute/load profiles

Capstone Project – PatchNotes | *Flutter, Firebase, ESP32, OpenCV*   **Nov. 2025 - Apr. 2025**
- Built a cross-platform mobile app and wearable device to monitor wound infections via hydrogel colour changes, providing real-time patient and clinician insights
- Integrated **Flutter UI**, Firebase authentication/storage, and ESP32 image capture with cloud-based **OpenCV analysis**; collaborated across hardware, software, and image processing teams

Pet Adoption App | *Next.js, Tailwind CSS, MySQL, Selenium, GitHub Actions*   **Apr. 2024**
- Developed a full-stack web app for multi-rescue pet listings with **schema/index tuning** for fast multi-filter search and pagination
- Implemented **CI/CD pipelines**: enforced pre-merge checks with Jest unit tests and Selenium IDE end-to-end tests; seeded data for reproducible development environments

Awards & Activities

NSERC Undergraduate Student Research Award *(Black Scholar)*   **Summer 2025**
University of Calgary   *Calgary, AB*