Nikolas "Dax" Manuel

CANADIAN CITIZEN

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EDUCATION

University of New Brunswick   Fredericton, NB
B. S. Software Engineering (Co-op), Minor in Mathematics | Dean's List 2024-2025   *Sep 2024 – Apr 2028*
- **Relevant Coursework:** Electrical Circuits, Data Structures & Algorithms, Software Engineering, System Design.

TECHNICAL SKILLS

Languages: C/C++, Python, Java, JavaScript, SQL
Frameworks/Libraries: Spring Boot, PyTorch, NumPy, Pandas
Developer/Engineering Tools: Git, AWS, Google Cloud Platform, Postman, Docker, Linux, Jira

EXPERIENCE

UNB Formula Electric   Sep 2025 – Present
Powertrain Member   *Fredericton, NB*
- Translated FSAE competition requirements into technical specfications and integrated the Accelerator Pedal Position Sensor (APPS) into the EV low-voltage system.
- Authored technical documentation for the APPS system integration to enable team knowledge transfer and long-term maintainability.
- Working on wiring harness research/implementation to ensure reliable signal transmission across the low-voltage system.

Intelligent Mobility and Robotics Lab   Feb 2026 – Present
Research Assistant   *Fredericton, NB*
- Contributing to computer vision research for safe speed estimation in semi-autonomous trucks in varying road and weather conditions using machine learning.
- Processing and annotating autonomous driving datasets to prepare for training computer vision based models.

PROJECTS

Neural Network From Scratch in C | GitHub
- Built a neural network handwritten digit classifier with the MNIST dataset in C achieving **98% accuracy**.
- Implemented matrix operations, back-propagation, gradient descent, and Relu + Softmax activation functions.
- Designed dynamic memory allocation for neural network tensors and matrices to eliminate memory leaks.

Vehicle Perception Model | GitHub
- Implemented PointPillars architecture for 3D object detection from LiDAR point clouds, building complete pipeline from data preprocessing to bounding box prediction with visualization.
- Preprocessed **150,000+** LiDAR frames from the Waymo Open Dataset, converting Parquet formatted data into NumPy arrays for convolutional neural network training in **PyTorch.**
- Reduced training time by **75%** by leveraging **AWS EC2** instances to perform scalable training.

HR System | CS2043 Term Project
- Led a group of four as scrum master, to build a full stack application integrating **RESTful API** architecture with **Spring Boot/Java**, JavaScript, and PostgreSQL, following Agile methodology.
- Designed **PostgreSQL** relational database schemas and API endpoints to support scalable complex queries.
- Managed tasks and sprint planning using Jira by organizing backlog items and tracking sprint progress.
- Implemented unit tests with JUnit and Postman to validate RESTful API ensuring correct request handling and responses for software validation and performed debugging, slashing errors by **99%**.