

Nikolas "Dax" Manuel

CANADIAN CITIZEN

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EDUCATION

University of New Brunswick

Bachelor of Science in Software Engineering, Minor in Mathematics | Dean's List 2024-2025

Fredericton, NB

Sep 2024 – Apr 2028

- Relevant Coursework: Data Structures & Algorithms, Software Engineering, Databases, Systems Programming.

TECHNICAL SKILLS

Languages: Python, Java, C/C++, JavaScript, SQL, HTML/CSS

Frameworks/Libraries: Spring Boot, PyTorch, NumPy, Pandas, FastAPI, Next.js

Developer/Engineering Tools: Git, AWS, Google Cloud Platform, Postman, Docker, Linux, Jira

EXPERIENCE

Intelligent Mobility and Robotics Lab

Jan 2026 – Present

Automotive Research Intern

Fredericton, NB

- Onboarding into machine learning research focused on safe speed estimation under diverse road and weather conditions for semi-autonomous trucks.
- Preparing and labeling autonomous driving datasets to support computer vision based model training

UNB Formula Electric

Sep 2025 – Present

Electrical Powertrain Member

Fredericton, NB

- Researched the integration of the Accelerator Pedal Position Sensor (APPS) into the vehicle low-voltage system, and translated FSAE rules into system requirements and design constraints.
- Designed and validated the integration of the APPS following requirements analysis and integrated the model with the accelerator pedal in SOLIDWORKS to ensure proper safety and compliance with requirements.
- Wrote clean technical documentation for the APPS system integration for maintainability and knowledge transfer.

PROJECTS

Vehicle Perception Model | [GitHub](#) | Python, PyTorch, NumPy, Pandas, AWS

Nov 2025 - Jan 2026

- Converted PointPillars research into a 3D vehicle perception pipeline from LiDAR data preprocessing to 3D bounding box predictions, with predictions vs ground-truth label comparison using Open3d visualization.
- Preprocessed **150,000+** LiDAR frames converting parquet formatted data into NumPy arrays for training.
- Trained the convolutional neural network model using **PyTorch** with the Waymo Open Dataset on GCP.
- Reduced training time by **75%** by leveraging **AWS EC2** instances to perform scalable training.

HR System | CS2043 Term Project | Spring Boot, JavaScript, HTML/CSS, PostgreSQL

Sep 2025 – Nov 2025

- Led a group of four as scrum master, facilitated agile principles for sprint events to build a full stack application integrating **RESTful API** architecture with **Spring Boot/Java, JavaScript, and PostgreSQL**.
- 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 to reduce errors by **99%**.
- Designed PostgreSQL relational database schemas and API endpoints to support scalable data workflows.

CAD Automation Platform | [McHacks '26](#) | FastAPI, Next.js, Gemini API

Jan 2026

- Developed a CAD automation application converting natural-language prompts into fully exportable 3D models in **under four seconds** with Gemini API, through **REST API** endpoints with **FastAPI**.
- Leveraged prompt engineering to optimize Gemini API output consistency and model quality.