Nikolas "Dax" Manuel

Canadian Citizen

(506) 897-2218 | dax.manuel@unb.ca | linkedin.com/in/nikolasdaxmanuel | github.com/DaxManuel27

Education

University of New Brunswick Fredericton, NB

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

- Developing machine learning models for safe speed estimation in diverse road and weather conditions for semi-autonomous trucks, improving driving safety.
- Labeled computer vision driving datasets in preparation for supervised model training.

UNB Formula Electric Sep 2025 – Present

Electrical Powertrain Member *Fredericton, NB*

- Researched the integration of the Accelerator Pedal Position Sensor (APPS), integrated a model with the accelerator pedal on SOLIDWORKS, and ensured part alignment with FSAE rules.
- Applied engineering and design principles to develop the low-voltage subsystem for an EV race car for Formula SAE (FSAE) competition while focusing on safety requirements, performance, and simplicity.
- Created 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 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.
- Reduced training time by **75%** by leveraging **AWS EC2** instances to perform scalable training.
- Trained the convolutional neural network model using **PyTorch** with the Waymo Open Dataset on GCP.
- Preprocessed **150,000+** LiDAR frames converting parquet formatted data into NumPy arrays for 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.**
- Applied the full software development life cycle from planning/requirements through implementation, testing and deployment, while ensuring high code quality, maintainability, and alignment with requirements.
- Implemented JUnit testing for software validation and performed debugging to reduce errors by **99%**.

CAD Automation Platform | McHacks '26 | *FastAPI, Next.js, Gemini API* Jan 2025

- 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 for high quality 3D models.