Caleb Mulugeta

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Education

Carleton University Ottawa, ON

B.S Computer Science Honours, Specialization: AI and Machine Learning *GPA: 3.9/4.0*

- **Coursework**: Data Structures and Algorithms, Object Oriented Programming (Java), Systems Programming, Fundamentals of Web Applications, Discrete Structures, Intro to Software Engineering, Linear Algebra I/II
- **Involvements**: Carleton Computer Science Society, ColorStack, National Society of Black Engineers
- **Awards**: Dean's Honor List, C. Gibson Scholarship

Technical Skills

- Java, Python, C, HTML, CSS, JavaScript, PyTorch, TensorFlow, Node.js, TypeScript, React, Git, Express, Linux, MongoDB

Experience

Software Developer April 2025 – August 2025

Carleton University *Ottawa,ON*

- Developed a modular, component driven layout system using TypeScript, React, and shared UI abstractions, allowing consistent rendering workflows across 10+ production pages, for a platform used by 1000+ students.
- Refactored an existing TypeScript codebase by replacing multiple page specific headers with a centralized, reusable layout component, eliminating duplicated UI logic by 25% and increasing maintainability.
- Collaborated within a Git based CI/CD environment alongside a 20 member distributed engineering team, contributing to open source repositories,improving software quality through code reviews and test automation.

Teaching Assistant Sep. 2025 – Present

Carleton University *Ottawa, ON*

- Supported 100+ first year CS students in mastering Java, OOP, inheritance, interfaces, recursion, arrays, linked structures, and algorithmic complexity, improving student comprehension through live code walkthroughs.
- Conducted weekly office hours, providing 10–15 individualized technical debugging sessions focused on compiler errors, logical correctness, and code optimization strategies.
- Assessed 200+ code submissions using grading rubrics. Delivering detailed feedback on correctness, style, documentation, and algorithm choice, ensuring consistency and fairness in assessment.

Projects

Brain Tumor Classifier | *Python, Pytorch, Matplotlib, Torchvision, Jupyter Lab*

- Built a convolutional neural network using PyTorch's nn.Sequential API to classify MRI brain images into four tumor types, trained for 25 epochs on GPU when available.
- Implemented a full image preprocessing pipeline using Torchvision (resize, tensor conversion, normalization) and created efficient training/testing data loaders with batching, shuffling, workers, and pinned memory for faster throughput.
- Achieved 96% test accuracy, validated through forward pass evaluation, average test loss calculation, and visualization of model predictions and sample MRI images using Matplotlib.

AutoPark — Car Dealership Management GUI | *Java, MVC, OOP, GUI Development*

- Coded an interactive AutoPark simulator in JavaFX, featuring live inventory tracking, cart-based sales management, and automated revenue analytics.
- Applied Java OOP fundamentals (classes, inheritance, encapsulation) and implemented strict MVC separation between model and GUI logic.
- Designed responsive UI with real-time event handling, enabling users to add/remove vehicles, complete sales, and reset stock with dynamic visual updates.