

Daniel Mehany

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SUMMARY OF QUALIFICATIONS

Design & Simulation: Altium Designer, KiCad, Tinkercad, AutoCAD, SolidWorks, MATLAB, Simulink
Embedded & Control Systems: Hardware-in-the-Loop (HIL), Verilog, ROS 2
Computer Vision & Data Analysis: OpenCV, MediaPipe, Control Vision, scikit-learn, Pandas, NumPy
Programming & Development Tools: C++, C, Python, Java, JavaScript, HTML/CSS, SQL, Docker, Node.js, Express.js, Linux, Virtual Machines, Git, GitHub, Jupyter Notebook

EXPERIENCE

Embedded Systems Engineer

Jan. 2025 – Apr. 2025

Skyjack Inc.

Guelph, Ontario

- Designed a Simulink-based HMI dashboard to simulate functionality through CAN communication and DBC file decoding
- Supported Hardware-in-the-Loop (HIL) testing by validating controller I/Os using custom dashboard, reducing testing time by 30%.
- Created a script to automate data collection from MATLAB simulation graphs, cutting analysis time by 100%.
- Optimized over 1,000 lines of MATLAB code for data visualization, resulting in a 20% faster runtime.

Hardware Design Engineer

Sept. 2024 – Present

Formula Electric

Waterloo, Ontario

- Designed a PCB in Altium Designer to monitor voltage levels for electrical safety, integrating a 555 timer, LEDs, capacitors, resistors, USB port, and system wiring for amplitude-based flashing indicators.
- Supported Formula Electric Race Car electrical system compliance and collaborated in team meetings on progress tracking, troubleshooting, and task planning.

Founder & Full-stack Engineer

[Demo](#) | [GitHub](#) | Dec. 2024 – May 2025

BestBudd.com

Toronto, Ontario

- Founded and launched BestBudd.com, a full-stack web application built with HTML, CSS, JavaScript, Node.js, and SQLite to support special-needs students that are part of life-skills classroom.
- Application has personalized student dashboards for reminders, schedules, bookmarks, and daily reflections; as well as a teacher dashboard for monitoring and class-wide management.
- Used by over 40 special-needs students across a few classrooms, and it's proven to be 50% more engaging and effective than generic platforms like Google Classroom.

PROJECTS

IMU STM32 Board

[Demo](#) | [GitHub](#) | April 2025

- Designed a 4-layer PCB with 2 ground and 2 signal layers based around a STM32 microcontroller using Altium.
- The board included a MPU-6050 accelerometer, differential USB, low dropout voltage regulator, crystal oscillator, TC2030 debug probe, and a JST GH connector.

TurtleBot4 Challenge — Toyota Innovation Hackathon

[GitHub](#) | May 2025

- Collaborated alongside a team of 4 to develop a four-level framework in Python and ROS 2, leveraging LIDAR for real-time obstacle avoidance and ultralytics YOLO for camera-based stop-sign detection with timed stops.
- Engineered a one-variable mode selector configuration to run each Python control scripts seamlessly in Gazebo simulation and on the physical TurtleBot robot.

Student Exam Score Predictor

[Demo](#) | [GitHub](#) | Feb. 2025

- Processed and analyzed 30,000+ student entries with 13 variables using Pandas and Jupyter Notebook, improving data organization and predictive accuracy.
- Developed and optimized three linear regression models for three different exam scores, math, writing and reading, using scikit-learn, achieving an average 5.6% error and 8.8% perfect predictions on student performance data.

SketchBot

[Demo](#) | [GitHub](#) | Dec. 2024

- Engineered SketchBot, a LEGO EV3-based robot programmed for automated multi-view engineering drawing.
- Built a 3-axis system achieving 2x drawing speed over manual methods with near-perfect accuracy.

EDUCATION

University of Waterloo

Sept. 2024 – Apr. 2029

Bachelor of Applied science (BASc) in Mechatronics, Robotics and Automation Engineering

Waterloo, Ontario