

Hamza Dugmag *Electrical and Computer Engineering Student*

✉ hamzadugmag.com ✉ hamza.dugmag@mail.utoronto.ca in linkedin.com/in/hamza-dugmag

☎ +1 (905) 510-9340 🌐 github.com/hamza-dugmag 📍 Toronto, ON, Canada

SKILLS

Hardware

Soldering, Oscilloscope, LTspice, KiCad, ModelSim, Raspberry Pi, Arduino, Vector Network Analyzer, Fusion 360, 3D Printing

Software

Python (NumPy, Pandas, PyPlot, SciPy, PyTorch), C/C++, Verilog, MATLAB, Assembly, Git, Docker, ROS, Unreal Engine

PROFESSIONAL EXPERIENCE

RTL Design Engineer — PEY Intern, Intel Corporation

- Engaged in design creation, debugging, and performance optimization of Nios V, Intel's next-generation RISC-V embedded processor family for FPGAs.

May 2023 – present
San Jose, CA, United States

Robot Navigation Research Intern, UTIAS Autonomous Space Robotics Laboratory

- Generated water masks of Canadian lakes using geographic information systems and implemented a greedy search baseline in Python to evaluate our navigation algorithm.
- Developed a graphical user interface using ROS and React JS to track a Clearpath Heron autonomous surface vehicle and visualize its navigation policy.
- Conducted field tests in various lakes to validate mapping, localization, and navigation.

May 2022 – Aug 2022
Mississauga, ON, Canada

Engineering Academic Review Mentor, U of T Faculty of Applied Science and Engineering

- Hosted weekly academic review sessions to support first-year Engineering Science students with their academic, professional, and personal goals.

Aug 2021 – Apr 2022
Toronto, ON, Canada

Machine Learning Research Intern, U of T Forcolab Group

- Investigated code-clone detection models to compare Stack Overflow code snippets to programming language documentation.
- Optimized parameters for hierarchical density-based clustering of Stack Overflow posts using Pandas and Docker, increasing precision by 11.1%.

May 2021 – Aug 2021
Toronto, ON, Canada

RESEARCH

Yizhou Huang, **Hamza Dugmag**, Timothy D. Barfoot, and Florian Shkurti, "Stochastic Planning for ASV Navigation Using Satellite Images", *IEEE International Conference on Robotics and Automation (ICRA 2023)* [website] 📄

Aug 2022

Hamza Dugmag, Arjun Sridharkumar, Iftekhar Ahmed, and Shurui Zhou, "Analyzing Stack Overflow Community Posts to Automate Knowledge Organization", *University of Toronto Undergraduate Engineering Days Conference (UnERD 2021)*

Aug 2021

EDUCATION

BASc in Engineering Science (Major in Electrical and Computer Engineering),

Certificate in Engineering Business, University of Toronto (St. George)

Sep 2020 – Apr 2025
Toronto, ON, Canada

- cGPA: 3.96/4.00 (92% average), Dean's Honours List in all semesters.
- Courses: Electronic Circuits, Semiconductor Physics, Electromagnetic Waves, Computer Organization, Systems Software, Systems Control, Energy Systems, Design and Ethics.

PROJECTS

University of Toronto Aerospace Team — Rocketry Division

Liquid Rocket Chief Engineer

Jun 2022 – May 2023

- Led the design, analysis, fabrication, and testing of a liquid bipropellant rocket.
- Created the design requirements, concept of operations, and mass budget.

Avionics Subsystem Lead <ul style="list-style-type: none"> Designed surge-protected relay circuits to control DC motors with a <i>Raspberry Pi</i>, increasing power rating by a factor of 20. Developed data acquisition methods to calibrate load cells and pressure transducers from a custom GUI with 95% accuracy. 	Jun 2021 – May 2022
Electric Guitar Pedals <ul style="list-style-type: none"> Designed a guitar distortion pedal based on a common-emitter NPN Darlington pair. Built a guitar tremolo pedal with true bypass switching using a phase shift oscillator. Soldered the electronics and packaged the boards in custom 3D-printed enclosures. 	Dec 2022 – Jan 2023
Multicycle Processor SIMD Extension, ECE352 Computer Organization <ul style="list-style-type: none"> Designed a vector extension for a multicycle processor implemented in <i>Verilog</i>. Verified the data and control paths using <i>Quartus Prime</i> Netlist Viewers and <i>ModelSim</i>. 	Nov 2022 – Dec 2022

AWARDS

(C\$2676) Peter Sands Award in Engineering Science, <i>U of T Faculty of Applied Science and Engineering</i>	Aug 2022
(C\$9000) NSERC Undergraduate Student Research Award, <i>Natural Sciences and Engineering Research Council</i>	Mar 2022
(C\$27000) Fessenden-Trott Scholarship, Universities Canada Selected among nominees from every Ontario university on the basis of academic merit and extracurricular involvement.	Sep 2021
(C\$5000) Dean's Summer Undergraduate Research Pivot Award, <i>U of T Faculty of Applied Science and Engineering</i> Participated in the <i>Undergraduate Summer Research Program</i> .	Sep 2021
Amateur Radio Operator Certificate (Basic with Honours), <i>Innovation, Science, and Economic Development Canada</i> VA3UFT call sign, 100% exam score.	Jul 2021
(C\$2000) Rotary Education Award, Rotary Club of Oakville	Jun 2020
(C\$2000) May Court Education Award, May Court Club of Oakville	Jun 2020
(C\$7000) Faculty of Applied Science and Engineering Awards, <i>U of T Faculty of Applied Science and Engineering</i>	May 2020