Hamza Dugmag *Electrical and Computer Engineering Student*

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SKILLS

Programming	**Electrical**	**Mechanical**	**Other**
MATLAB, Python (NumPy, Pandas, SciPy, PyTorch), C/C++, Verilog, Assembly, Git, Docker, ROS, DHTML	*Raspberry Pi, Arduino, Quartus Prime, LTspice, Altium Designer, Soldering*	*SolidWorks, Fusion 360, Woodworking, 3D Printing, Laser Cutting*	*LaTeX, Unreal Engine, Photography, Adobe Illustrator, MS Excel*

PROFESSIONAL EXPERIENCE

Robot Navigation Research Intern, *U of T Autonomous Space Robotics Lab* — May 2022 – present, Mississauga, ON, Canada
- Developed a GUI using *ROS* and *React JS* to track a *Clearpath Heron* unmanned surface vehicle (USV) and visualize its navigation policy.
- Generated water masks of Canadian lakes in UTM coordinates using *Google Earth Engine* to evaluate the policy planner when simulating digital twins in parallel.
- Conducted field tests in lakes to validate USV mapping, localization, and navigation.
- Co-supervised by Prof. Tim Barfoot (UTIAS) and Prof. Florian Shkurti (CS).

Engineering Academic Review Mentor, — Aug 2021 – Apr 2022, Toronto, ON, Canada
U of T Faculty of Applied Science and Engineering
- Hosted guided engineering academic review sessions (GEARS) every week to support first-year engineering students with their academic, professional, and personal goals.

Machine Learning Research Intern, *U of T Forcolab Group* — May 2021 – Aug 2021, Toronto, ON, Canada
- Replicated BERT models using *PyTorch* to detect type-III code clones.
- Optimized parameters for hierarchical density-based clustering of *Stack Overflow* posts using *Pandas* and *Docker*, increasing precision by 11.1%.
- Presented "*Analyzing Stack Overflow Community Posts to Automate Knowledge*" at the 2021 *U of T UnERD Conference*.
- Co-supervised by Prof. Shurui Zhou (ECE) and Prof. Iftekhar Ahmed (UCI).

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: 3.94/4.00 (90%), Dean's Honours List in all semesters.
- Relevant courses: Electronics, Computer Organization, Electromagnetism, Signal Analysis, Data Structures and Algorithms, Engineering Ethics and Design I/II/III.

EXTRACURRICULARS

University of Toronto Aerospace Team — Rocketry Division

Liquid Rocket Chief Engineer — Jun 2022 – present, Toronto, ON, Canada
- Led the design, analysis, fabrication, and testing of a liquid bipropellant rocket set to break the Canadian Amateur Rocketry Altitude Record.
- Created the design requirements, concept of operations, project timeline, and financial, power, and mass budgets.

Avionics Subsystem Lead   Jun 2021 – May 2022
- Developed data acquisition methods to calibrate load cells and pressure transducers   Toronto, ON, Canada
  with 95% accuracy.
- Designed surge-protected relay circuits for DC motors controlled by a *Raspberry Pi*,
  increasing power rating by 54%.
- Integrated radio and GPS modules, buck and boost converters, servo motors,
  solenoid valves, local networks, and a custom user interface.
- Represented the Rocketry division in an interview for *UTAT*'s recruitment and
  sponsorships video. ↗

PROJECTS

Maintaining Vaccine Temperatures, *Engineering Science — Praxis III*   Jan 2022 – Apr 2022
- Co-authored a design proposal, project management plan, verification plan, financial
  budget, and bill of materials.
- Prototyped a thermochemically-cooled box using *Fusion 360* and 3D printing.
- Programmed a temperature controller with a *Raspberry Pi* using *Python*.

Modelling a Vibrating Building, *MathWorks MATLAB Summer Hackathon*   Jul 2021
- Implemented systems of differential equations in *Simulink* to simulate free vibrations.
- Calculated resonant frequencies in *Microsoft Excel*.
- Received the "*Best Use of Simulink*" award.

AWARDS

(C$9000) NSERC Undergraduate Student Research Award,   Mar 2022
Natural Sciences and Engineering Research Council

(C$9000) Fessenden-Trott Scholarship, *Universities Canada*   Sep 2021
Selected among nominees from every Ontario university on the basis of academic merit
and extracurricular involvement.

(C$5000) Dean's Summer Undergraduate Research Pivot Award,   Sep 2021
U of T Faculty of Applied Science and Engineering
Participated in the *Undergraduate Summer Research Program*.

Second Degree Black Belt, *World Taekwondo — Kukkiwon*   Aug 2021
International athlete and coach with 7 years of experience.

Amateur Radio Operator Certificate (Basic with Honours),   Jul 2021
Innovation, Science, and Economic Development Canada
VA3UFT call sign, 100% exam score.

(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,   May 2020
U of T Faculty of Applied Science and Engineering

First Degree Black Belt, *World Taekwondo — Kukkiwon*   Dec 2019

Humanitarian Service Project Silver Medal, *Muslim Interscholastic Tournament*   Mar 2019
Executed a fundraiser campaign with *Islamic Relief USA* for East Africa's water and
sanitation crisis.