Hamza Dugmag *U of T Engineering Science — Robotics Engineering*

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Profile

I am a second-year Engineering Science student at the University of Toronto. I am a passionate designer and leader interested in robotics for space exploration. I use the world I have to build the world I want.

Skills

Programming
MATLAB, Python (NumPy, Pandas, SciPy, PyTorch), C/C++, Verilog, Assembly, Git, Docker, DHTML

Electrical
Raspberry Pi, Arduino, Quartus Prime, LTspice, Altium Designer, Soldering

Mechanical
SolidWorks, Fusion 360, Woodworking, 3D Printing, Laser Cutting

Other
LaTeX, Unreal Engine, Photography, Adobe Illustrator, MS Excel

Education

Sep 2020 – Apr 2025
Toronto, ON, Canada

BASc in Engineering Science (Major in Robotics Engineering), *University of Toronto*

- cGPA: 3.92/4.00 (90%), Dean's Honours List.
- Minor in Artificial Intelligence Engineering and Certificate in Engineering Business.
- Relevant courses: Electric Circuits, Digital and Computer Systems, Electromagnetism, Data Structures and Algorithms, Engineering Design I/II/III, Engineering Ethics.

Professional Experience

Aug 2021 – present
Toronto, ON, Canada

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

- Hosted guided engineering academic review sessions (GEARS) every week aimed at supporting first-year Engineering Science students with their academic, professional, and personal goals.

May 2021 – Sep 2021
Toronto, ON, Canada

Machine Learning Research Intern, *U of T Forcolab Group*

- Replicated BERT models for detecting type-III code clones using *PyTorch*.
- Optimized parameters for hierarchical density-based clustering of *Stack Overflow* posts using *Pandas* and *Docker*, increasing precision by 11.1%.
- Supervised by Prof. Shurui Zhou (ECE).

Extracurriculars

Jan 2021 – present
Toronto, ON, Canada

University of Toronto Aerospace Team — Rocketry Division,
Avionics Co-Lead and Member

- Developed data acquisition methods to calibrate load cells and pressure transducers with 95% accuracy.
- Designed surge-protected relay circuits for DC motors controlled by a *Raspberry Pi*, increasing power rating by 54%.
- Represented the Rocketry team in an interview for *UTAT*'s recruitment and sponsorships video.

Projects

Jan 2022 – present

Controlling Vaccine Temperatures, *Engineering Science — Praxis III*

- Co-authored a design proposal, project management plan, and financial budget.
- Prototyped a thermoelectric cooling box using *Fusion 360* and 3D printing.
- Programmed a PID temperature controller with a *Raspberry Pi*.

Jul 2021 – Jul 2021

Modelling a Vibrating Building, *MathWorks MATLAB Summer Hackathon*

- Implemented systems of differential equations in *Simulink* to simulate free vibrations.
- Calculated resonant frequencies in *Microsoft Excel*.
- Received the "*Best Use of Simulink*" award.

Jan 2021 – Mar 2021

Encouraging Sustainable E-Commerce, *Western University's W5 Accelerator*

- Collaborated with four colleagues to design a browser extension that evaluates the sustainability of online products and brands.
- Designed the visual brand identity in *Adobe Illustrator* and programmed the front-end interface using *HTML*, *CSS*, and *Javascript*.
- Acquired seed funding as a winning team.

Conferences

Aug 2021

"Analyzing Stack Overflow Community Posts to Automate Knowledge",
University of Toronto Undergraduate Engineering Days (UnERD) Conference

- Presented my work on optimizing density-based clustering of *Stack Overflow* posts during my time at the *Forcolab Group*.

Awards

Sep 2021

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

Sep 2021

(C$6500) Dean's Summer Undergraduate Research Pivot Award,
U of T Faculty of Applied Science and Engineering
Participated in the *Undergraduate Summer Research Program*.

Aug 2021

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

Jul 2021

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

Jun 2021

2020-2021 Engineering Dean's Honours List,
U of T Faculty of Applied Science and Engineering

Sep 2020

(C$7000) Dean's Merit Awards, *U of T Faculty of Applied Science and Engineering*

Jun 2020

(C$2000) Rotary Education Award, *Rotary Club of Oakville*

Jun 2020

(C$2000) May Court Education Award, *May Court Club of Oakville*

Mar 2019

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