

# Eric-Khang Dao

University of Waterloo  
Candidate for MASc

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## Education

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### University of Waterloo

Waterloo, ON

*Candidate for MASc, Electrical and Computer Engineering*

*Sept 2023 - Aug 2025*

- Research topics: Integrated Circuits, RTL Design, Machine Learning, Digital Accelerators, Low Power Design, Edge Computing
- Relevant courses: Integrated VLSI Systems, Advanced Analog Integrated Circuits, Register-Transfer Level Systems
- Supervisor: Dr. Vincent Gaudet, PEng

### University of Waterloo

Waterloo, ON

*BASc, Honours Mechatronics Engineering, Co-op*

*Apr 2023*

- Relevant courses: Integrated Digital Circuits, Integrated Analog Electronics, Real-Time Operating Systems, RTL Design, Algorithms

## Technical Qualifications

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**EDA/CAD:** Cadence Virtuoso, KiCAD, Solidworks, CATIA

**Software:** C/C++, Assembly (ARM Cortex, RISC-V), Verilog, Python, Git

**Simulation:** LTspice, MATLAB/Simulink

**Hardware:** FPGA, Oscilloscope, Logic Analyzer, SMT Soldering

**Embedded:** RTOS, Linux, Interrupt-Driven Design, Device Drivers

**Communication:** UART, I2C, CAN, SPI, LVDS, High-Speed

## Professional Experience

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### Forward Robotics Inc

Cambridge, ON

*Drone Mechatronics Engineer*

*May 2023 - Aug 2023*

- Start-to-finish design of a high-speed NVIDIA Jetson carrier PCB for in-air object detection, resulting in a 10x increase in human search-and-rescue mission time
- Software development of a 3D ground control station for drone path planning & live data monitoring, reducing failure modes compared to its predecessor by 200%

### Forward Robotics Inc

Cambridge, ON

*Electrical Engineering Intern - Drone Avionics*

*Sept - Dec 2021, May - Aug 2022*

- Start-to-finish design of an RF PCB for drone data telemetry and RC control using STM32 platform, serving as the main link between the drone and the ground team
- Wrote an OSD driver in C for an FPV camera system by reverse engineering an off-the-shelf flight controller, enabling live data monitoring of first-person view during drone flights
- Start-to-finish design of an avionics module and harness tester on a proprietary RTOS, resulting in a 25% reduction in manufacturing time

## M.I.S Electronics Inc

*R&D Embedded Firmware Engineering Intern*

Richmond Hill, ON

*Feb 2021 - Apr 2021*

- Designed and implemented an electronic faucet parameter programmer, a novel functionality for end users which was not available before
- Created a pure JavaScript web application to optically program faucet parameters with a cell phone display flashing encoded serial data
- Programmed RISC-V MCU drivers in C to detect and process serial data from a flashing cell phone screen, and writes processed data to an EEPROM via I2C
- Implemented a TEG energy harvester using a Peltier module between hot/cold water pipes, increasing the power efficiency of the system by 100%

## Volunteer Experience

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### FIRST<sup>®</sup> Robotics Competition

*Mentor, Team 6397*

York, ON

*Sep 2018 - Present*

- Mentoring high school robotics team in engineering design & manufacture
- Teaching CAD essentials for 3D printing, electrical fundamentals, and OOP in Java using FRC's framework

## Projects

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### AI-Assisted Waste Diversion Bin

*Engineering Capstone Project*

*Sept 2022 - Apr 2023*

- Winner of Velocity's \$5K Pitch Competition and featured on CBC News
- Designed the inlet mechanism used to open and close the inlets
- Start-to-finish design of electrical network, consisting of 4 PCBs to drive actuators and display waste items on-screen

### Automatic Watch Winder

*Personal Project*

*May 2022 - Aug 2022*

- Designed a 4 layer PCB to rotate an automatic watch, uses an ATmega328p with a silent Trinamic stepper driver
- Software is written in AVR Assembly

### Automatic Motorized Blinds

*Personal Project*

*May 2021 - Aug 2021*

- Developed device to automatically open and close window blinds during sunrise and sunset
- Sunrise and sunset times are locally calculated on an ESP32 given a longitude/latitude
- Modeled motor adapter in Solidworks, and 3D-Printed in house

### Metal Foundry & Forge Burner

*Personal Project*

*May 2020 - Aug 2020*

- Using SolidWorks, designed then fabricated a metal foundry, capable of melting aluminum
- Constructed and tuned a 20 PSI propane forge burner, capable of reaching internal crucible temperatures of 1000°C