

# Eric-Khang Dao

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## Education

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### University of Waterloo

*MASc, Electrical and Computer Engineering*

Waterloo, ON

*June 2025*

- Thesis: FPGA-Accelerated Deep Learning for Denoising Low-Dose PET Scans
- Relevant courses: Integrated VLSI Systems, Advanced Analog Integrated Circuits, Register-Transfer Level Systems
- Supervisor: Vincent Gaudet, PhD, PEng

### University of Waterloo

*BASc, Honours Mechatronics Engineering, Co-op*

Waterloo, ON

*June 2023*

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

## Technical Qualifications

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

**Software:** C/C++, SystemVerilog/Verilog, Python

**Simulation:** LTspice, MATLAB/Simulink

**Hardware:** FPGA, Electronic Bench Equipment, SMT Soldering

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

**Protocols:** USB, Ethernet, DP/HDMI, UART, I2C, CAN, SPI, LVDS, TCP/IP

## Professional Experience

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### Gecko Robotics Inc

*Electrical Engineer*

Pittsburgh, USA

*Sept 2025 - Present*

- Start-to-finish design of various high-speed PCBs for ground station using Altium Designer
- FPGA hardware design for portable phased-array ultrasound systems

*Electrical Engineering Intern*

*June 2024 - Aug 2024*

- Development of a FPGA-based ultrasonic pulser and high-speed ADC data acquisition system on the Xilinx FPGA platform, capable of processing data rates of up to 14 Gbps
- Start-to-finish design of various high-speed PCBs using Altium Designer, including protocols such as HDMI, USB3, and Ethernet

### Forward Robotics Inc

*Drone Mechatronics Engineer*

Cambridge, Canada

*May 2023 - Aug 2025*

- Implemented UDP socket drivers for redundant bidirectional communication between ground control and aircraft

- Development of a fleet management system MVP, full-stack application for client side monitoring and ground control of flight paths
- Start-to-finish design of a high-speed NVIDIA Jetson Orin Nano 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%

*Drone Mechatronics Engineering Intern*

*Sept 2021 - Aug 2022*

- Start-to-finish design of an RF PCB for drone data telemetry and RC control using the 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

## Publications

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### **Hardware-Compatible U-Net for Low-Dose PET Reconstruction**

*Eric-Khang Dao, Katherine Zukotynski, Sandra E. Black, Vincent Gaudet*

*ISMVL 2025*

- Developed of a hardware-compatible U-Net achieving  $7.42\times$  parameter reduction via depthwise separable convolutions and  $4\times$  compression through quantization, enabling efficient FPGA deployment for low-dose PET image reconstruction, presented at ISMVL 2025

## 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  $1000^{\circ}\text{C}$