

# Nicholas Short

## Electrical and Computer Engineering Student

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## Education

### University of Toronto

Toronto, Canada

Bachelor of Applied Science & Engineering: Electrical and Computer Engineering

2019 -2023

Relevant courses: Control Systems, Digital and Analog Electronics, Computer Hardware, Data Structures & Algorithms, Operating Systems, Machine Learning

**Awards:** Edward S. Rogers Sr. Admissions Scholarship, Stuart Morris Computer Science Scholarship, 2019-2020/2021-2022 Dean's Honours List

## Experience

### Laszlo Energy Services – Electronics and Software Engineer

Toronto, Canada

May 2022 - Present

- Designed and implemented an electronic product to interact with residential heat pumps to actively minimize home heating expenses according to peak electricity prices and utility-initiated demand response events
- Programmed an ESP32 microcontroller on a custom PCB to communicate with a python API I implemented, currently hosted on a cloud VM
- Configured and deployed Postgres database to supply the API with electricity rates and home data

### Bibliocommons – Platform Engineer Intern

Toronto, Canada

May 2022 - Present

- Developed user-facing settings panels in Ruby on Rails, embedded Ruby, and JavaScript based on UX specifications
- Deployed and configured software applications running on AWS EC2 instances
- Implemented new reliable code to existing backend services in Java

### Metrolinx TOTM Project Team – Software Developer

Toronto, Canada

TOTM: Transit Operations Technology Modernization Program

July 2021- August 2021

- Developed software for a message queue probing service (RabbitMQ), to verify queue health using the .NET Core framework
- Containerized the queue probing service with Docker
- Implemented a Redis database to ensure High Availability

## Projects

### Two Wheel Balancing Robot | Project GitHub: [github.com/nicholasshort/TwoWheelRobot](https://github.com/nicholasshort/TwoWheelRobot)

- Designed and built a two wheel self balancing robot using an Arduino Nano microcontroller and the MPU6050 inertial measurement unit (IMU)
- Successfully achieved stability by employing a PID control loop, and implemented a Kalman Filter to filter out the accelerometer noise and to account for gyroscope drift

### Mapper Project | Project GitHub: <https://github.com/nicholasshort/MAPS-by-KNP>

- Implemented a large-scale GIS software, inspired by Google Maps using C++, GTK, EZGL libraries, and OpenStreetMap database API
- Made use of Simulated Annealing to resolve Traveling Salesman Problem

## Skills

### Technical Skills:

- CAD: Altium, CATIA, SolidWorks
- Programming Languages: C/C++, C#, Python, Java, Javascript, MATLAB
- Hardware: ARM Assembly, System Verilog, Quartus Prime, Model Sim, FPGA
- Others: Git, Linux / UNIX Systems, Microsoft Office