

Elisa Ding

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in Elisa Ding

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SKILLS

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|----------------------|--------------|-----------------------------------|
| ○ Python | ○ MATLAB | ○ Git/CVS |
| ○ Tensorflow/Pytorch | ○ PostgreSQL | ○ Linux/MacOS/Windows |
| ○ C/C++ | ○ ARM/RISC | ○ Microsoft Office/Google G Suite |

EDUCATION

University of Toronto

Toronto, ON

BASc. in Engineering Science, Major in Machine Intelligence
Engineering Business Minor

2018 - Expected May 2023

EXPERIENCE

Trimble Inc. (Applanix Corporation)

Richmond Hill, ON

Hardware/Testing Intern

May 2021 - Present

- Created **PTP** timing tool to resolve clumping/latency issues, investigated network packets in **Wireshark**
- Processed GNSS-inertial navigation data, generated statistics and reports in **MATLAB**
- Developed circuitry and test script to **reproduce hardware shutdown issues** in Applanix APX-15

Autonomy/ML Intern

- Implemented **place recognition** algorithm in **Tensorflow 2** on LIDAR data, automated **CI/CD** in Gitlab
- Deployed training using **Kubernetes** and **Docker** containers
- Designed **device driver** and unit tests in C++ to receive and parse messages from APX-15 to **ROS**
- Participated in hackathon processing LIDAR data to assess shoreline erosion

PROJECTS

Robotics for Space Exploration

University of Toronto

Arm Design Team Member

September 2019 - Present

- Designed and created a new **rover arm** for competitions simulating space-like conditions, built in **ROS** and visualized in **Movelt**. Extracted **Jacobian matrix** of robot joints to implement remote control
- Prototyped and tested models using CAD software (**Solidworks** and **Onshape**)

Autonomous Design Challenge

University of Toronto

Team Member

January-April 2020

- Designed a rover from scratch to complete the task of autonomous vehicle charging with **OpenCV**
- Experience processing **sensory input** (NIR, ultrasonic), interfacing with **Arduino** as a microcontroller

RESEARCH PUBLICATIONS

NoFADE: Analyzing Diminishing Returns on CO2 Investment, NeurIPS Climate Change 2021

Developed a novel metric to quantify the relationship between computer vision models and the datasets they are trained on to measure CO2 emissions, establishing diminishing returns on model complexity.

P4AI: Approaching AI Ethics Through Principlism, NeurIPS HCAI 2021

Extension of reflexive principlism, introducing enforcement as a communal obligation to protect end-users against the crises of privacy and climate change. Provides methods for researchers to develop ethically aware neural architectures.

RELEVANT COURSES

Calculus, Probabilistic Reasoning, Artificial Intelligence, Systems Software, Matrix Optimization