

Stefan de Lasa


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EDUCATION

University of Toronto, BAsC - Computer Engineering 2020-2025
Cumulative GPA: 3.86 / 4.0 (Dean's Honour List) (4 years + Co-op year)


WORK EXPERIENCE

Software Development Intern, *CentML*, Toronto, ON **Sep 2023 - Aug 2024**

CentML  develops tools to make machine learning (ML) inference and deployment more affordable and efficient.

- Sole contributor of **PyTorch** model remote compilation project (**Docker**, **AWS**, **k8s**) for deployment optimization on CentML's cloud-hosted, distributed platform.
- Designed ML model compilation caching system, to reduce costs and improve user experience (**Postgres**, **S3**).
- Enabled developer workflows with a local compilation server, which is hostable via public client (**Python**). 
- Developed a method to consistently hash ML models, including **LLMs** and **CNNs**.
- Added end-to-end testing support to CentML's platform. Wrote compilation server tests using this system.

Undergraduate Research Student, *James Elder*, *York University*, Toronto, ON **May - Aug 2023**

The Elder Lab  is investigating using **image semantics** (classification of objects in an image) to improve computer vision monocular **depth estimation**. This has applications in self-driving cars, robotics, and more.

- Formulated methods to apply Elder's model to enhance existing ML depth estimation solutions.
- Demonstrated **~20%** accuracy improvement over previous depth estimation models (**Python**).
- Awarded **Student Choice Best Presentation** at the Lasonde Undergraduate Research Conference.

Software Engineer Intern, *PointClickCare (PCC)*, Toronto, ON **May - Aug 2022**

PCC creates healthcare software to assist vulnerable populations with out-of-hospital care.

- Wrote front-end code to ease the editing of patient screening templates (**TypeScript**, **React**). Several internal users mentioned improved usability from my work.
- Extracted and sent user metrics to PCC's Pendo analytics and workflow improvements system.

Data Management Intern, *Independent Electricity System Operator (IESO)*, Toronto, ON **Jun - Aug 2021**

As the Crown corporation responsible for operating/directing the electricity market in Ontario, the IESO gathers and monitors data from industrial customers throughout the province.

- Spearheaded **machine learning** project for anomaly detection, using IESO's historical datasets.
- Performed in-depth review of Meter Service Provider data, for meter billing report correctness.

EXTRA CURRICULARS

aUToronto Planning Team Member, *UofT Self-Driving Car Team*, Toronto, ON **Sep 2023 - May 2024**

The aUToronto planning team develops navigation algorithms for autonomous vehicles.

- Created method (**C++**, **ROS2**) to find the fastest route to the nearest empty parking spot.
- Proposed and implemented a technique to reduce map density, improving planning performance **>20%**.

UTSM Electrical Team Member, *UofT Supermileage Team*, Toronto, ON **Nov 2021 - May 2022**

UTSM is a student team dedicated to designing and building a highly fuel-efficient vehicle. I contributed to projects on the electrical system design, including the turning indicators and windshield wipers.

CONFERENCES

Lasonde Undergraduate Research Conference, *York University*, Toronto, ON **Aug 2024**

- Oral Presentation: "Improving Deep Learning Depth Estimation Using Image Semantics and Geometry".
- Received the **Student Choice Best Presentation** award.

PROJECTS

Programmable Compass

April 2023 [🔗](#)

- Used a GPS module to receive location data using USART communication and Direct Memory Access.
- Communicated via I2C with a magnetometer to determine my compass' orientation.
- Used Pulse-Width-Modulation to display the direction and distance on an LED ring.

OS161 (Operating System)

Jan 2023 - April 2023 [🔗](#)

- Implemented **memory management**, page reclamation, demand paging, and page swapping with disk.
- Created core system calls for user programs including waitpid, fork, and exec.
- Added key synchronization primitives such as locks and condition variables.

ML Model for Circuit Identification

Jan 2023 - Apr 2023 [🔗](#)

- Created a **Convolutional Autoencoder Model (PyTorch)** to segment circuit drawings.
- Achieved a **45% accuracy**, representing a **200% increase** from the baseline.
- Wrote scripts to prepare image data for training, applying transformations to increase dataset size.

Digital Camera Optimization

Mar 2023 - Apr 2023 [🔗](#)

- Interfaced with a camera module to display a video stream, using a **STM32 microcontroller**.
- Achieved a **680% FPS** improvement using data truncation, **run-length encoding** and **delta frames**.

Radio Transceiver

Jan - Apr 2022 [🔗](#)

- Designed limiter, filter, mixer, and amplifier circuits for a radio receiver (Altium, Multisim).
- Demonstrated successful integration of our subcircuits into a functioning radio transceiver.
- Communicated design rationale to technical and non-technical audiences through presentations.

AWARDS

Lassonde Undergraduate Research Award (LURA) (\$10,000 CAD)	2023
Student Choice Best Presentation at the Lassonde Undergraduate Research Conference	2023
Dean's List Scholar (UofT)	2020-2023
UofT Engineering Entrance Scholarship (\$2,000 CAD)	2020

OTHER

Citizenship: Canadian and American

Languages: English (Native Proficiency), French (Native Proficiency), Polish (Beginner)

REFERENCES

Dr. Gennady Pekhimenko, Assistant Professor of Computer Science at UofT, CEO of CentML.

Email: gennady@centml.ai, Website: [🔗](#)

Anand Jayarajan, Co-Founder and Chief Architect at CentML.

Email: anandj@centml.ai, Website: [🔗](#)

Dr. James Elder, Professor of CS at York University, York Research Chair in Human and Computer Vision.

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