

# Stefan de Lasa


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## EDUCATION

University of Toronto, Bachelor of Applied Science & Engineering - Computer Engineering 2020-2025  
Seasonal GPA: 4.0 / 4.0, 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

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

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

## PROJECTS

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### 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 a 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 circuits 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

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Lassonde Undergraduate Research Award (LURA) (\$10,000)	2023
Student Choice Best Presentation at the Lassonde Undergraduate Research Conference	2023

## OTHER

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Citizenship: Canadian and American

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

## REFERENCES

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**Dr. Gennady Pekhimenko**, Assistant Professor of Computer Science (CS) at UofT, CEO of CentML.

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

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

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