Stefan de Lasa

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Education

University of Toronto, Bachelor of Applied Science & Engineering - Computer Eng. 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**).
- Supported 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.

Research Assistant, *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 applying Elder's semantic-based model to enhance existing ML depth estimation solutions.
- Validated various approaches, demonstrating ∼**20%** accuracy improvement over previous models (**Python**).
- Awarded **Student Choice Best Presentation** at the Lassonde 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.

- Prepared presentation to highlight uses of **machine learning** to improve existing processes.
- Recommended **supervised learning** for anomaly detection, using IESO's historical datasets.
- Worked with peers to review Meter Service Provider data, for meter billing report correctness.

Extra Curriculars

aUToronto, *University of Toronto Self-Driving Car Team,* Toronto, ON **Sep 2023 - May 2024**

The aUToronto planning team develops navigation algorithms for autonomous vehicles.

- Implemented 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, *University of Toronto 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.

Projects

Programmable Compass, **Apr 2023**

Built a compass that points to a programmable location. Used a **STM32 Microcontroller** connected to a GPS module via **USART** and **DMA**, to a Magnetonomer via **I2C**, and to a LED ring display via **PWM**.

Radio Transceiver, *Hardware Design (ECE295)* **Jan 2022 - Apr 2022**

Designed, built, and tested 2 radio transceiver components. Used **Altium** and **Multisim** to design a limiter, filter, mixer and amplifier. Presented the team's results to both technical and non-technical audiences.

OS161, *Operating Systems (ECE344)* **Jan 2023 - Apr 2023**

Built upon the OS161 operating systems by implementing **memory management** (page reclamation, swapping, demand paging), **system calls** (waitpid, fork, exec) and **synchronization basics** (locks, condition variables).

ML Model for Circuit Identification, *Intro to Deep Learning (APS360)* **Jan 2023 - Apr 2023**

Created a **Convolutional Autoencoder Machine Learning Model** using **PyTorch** to segment drawings of circuits into different modules. Achieved a **45% accuracy**, representing a **200% increase** from the baseline.

Digital Camera Optimization *Computer Hardware (APS360)* **Mar 2023 - Apr 2023**

Used a **STM32 microcontroller** to interface with a camera module to display a video stream. Optimized FPS using **DMA**, data truncation, **Run-Length Encoding** and **Delta Frames** to achieve a **400%** improvement.

Conferences

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

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

Other

Citizenship: Canadian and American
Languages: English (Native Proficiency), French (Native Proficiency), Polish (Beginner)

References

Anand Jayarajan, Co-founder and Chief Architect at CentML, PhD student at the University of Toronto.
Email: anand.indukala@gmail.com

Dr. James Elder, Professor at York University, York Research Chair in Human and Computer Vision.
Email: jelder@yorku.ca