# Daniel DeBrun

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Citizenship: Canada, Ireland - EU

## Education

**University of Toronto** *Honors B. Sc in* **Computer Science & Applied Statistics** *Sept 2023 – Expected 2027*

- **Key Coursework:** ML, Prob. & Stats., Software Design, Tools and Systems, Computer Arch., Effective Writing

## Experience

**Software Lead** | *UTASR (University of Toronto Autonomous Scale Racing)* *Jul 2024 – Present*

- Spearheading teams across **web development**, **optimization**, **data preprocessing**, and **machine learning** projects.
- Overseeing comprehensive project lifecycles, ensuring timely delivery and alignment with strategic objectives.
- Leading **autonomous** RC car development using **reinforcement learning**, **CNNs**, and real-time system optimization.
- Developed control systems using **behavioral cloning** techniques, with ongoing progress toward **RL** solutions.

**Legal Assistant** | *Dushahi Law Corp* *Aug 2021 – Jan 2024*

- Conducted case research and **managed documentation** to support legal proceedings while maintaining confidentiality.
- Digitized and systematically organized client records, ensuring meticulous **attention to detail** and **data accuracy**.
- Improved financial processes by assisting with **bookkeeping** and **expense tracking** using Excel for data management.

**Cafe Crew Member** | *Tim Hortons* *May 2021 – Jun 2023*

- **Took initiative** to manage drive-thru operations and menu systems, ensuring **accurate** and **timely** order processing.
- Consistently recognized for **exceptional** customer service. **Took charge** of facilitating staff on-boarding and training.

## Projects

**Autonomous RC Car** | *UTASR* *github repo*

- Experimenting with **RNNs** for behavioral cloning, ensuring smooth throttle and steering control outputs.
- Optimized **CUDA**, **PyTorch**, and **Linux** for real-time performance, low latency, and power efficiency on **Jetson**.
- Distilling large **ViTs** to efficient **CNNs**, syncing sensor data and **Kalman filtering** to approximate a vehicle state.
- Migrating towards an **RL** implementation for adaptive, real-time decision-making and improved **racing dynamics**.

**Dynamic Stock forecasting** *github repo*

- Developing a stock forecasting approach using **Transformers** for attention mechanisms over large sequence histories.
- Experimenting with **preprocessing** and **feature engineering** techniques to enhance model performance and reliability.
- Building a **unified pipeline** for dataset creation, training, evaluation, and visualization, streamlining deployment.

**Touchless AI Assistant** | *MakeUofT 24'* *devpost page*

- **AI** wearable with hand gesture control, text-to-speech, speech-to-text, **prompt-driven intelligence**, and data storage.

**Autonomous Beach Sweeping** *UTRA Hacks 24'* *devpost page*

- Leveraged **Android** for sensor integration and compute, enabling real-time **OpenCV**-based tracking and **Serial I/O**.

## Skills & Interests

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|---|---|
| **Soft Skills:** | Teamwork, Communication, Problem-Solving, Time-Management, Leadership |
| **Languages:** | Python, Java, C, Assembly, R, Bash, Shell, HTML, CSS |
| **Frameworks & Libraries:** | PyTorch, TensorFlow, Scikit-Learn, OpenCV, NumPy, Pandas, Selenium, Matplotlib |
| **Technologies & Tools:** | Unix, Linux, Git, Jupyter, Android, Nvidia Jetson, Raspberry Pi, Arduino |
| **Interests:** | Finance, Robotics, Computer Vision, Mountain Biking, Music, Photography, Hackathons |

## Awards

**Schulich Leader Nomination (1 of 1400 Global)** schulichleaders.com

**Don Walker Scholarship (1 of 80 Global)** magna.com/scholarship

**Highest Average & Course Award : Computer Science, English**