

Rea Ahuja

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Driven and analytical Computer Engineering student with a strong passion for machine learning, embedded systems, and control systems. Demonstrated experience in research and programming, with a strong track record of developing innovative solutions and tackling complex challenges with curiosity and determination.

EDUCATION

University of Toronto

BASc, Computer Engineering + PEY Co-Op

Toronto, Ontario

Sep. 2022 – May 2027

EXPERIENCE

Undergraduate Researcher and Software Developer

May 2023 – Present

University of Toronto

Toronto, Ontario

- **Led** the development of a Visual Studio Code extension named "Falcon", utilizing OpenAI's API to assist students in debugging syntax, logical, Valgrind, and cppcheck errors.
- **Conceptualized and implemented** tools to enhance student debugging skills, driving the extension's full development and integration.
- **Collaborated** with Professor Salma Emara on research, including designing and conducting human-subject experiments to evaluate and improve the extension's effectiveness.

PROJECTS

DermAI: Skin Cancer Detection | Python, TensorFlow

July 2024

- **Architected and developed** a machine learning model for skin cancer classification, achieving an accuracy improvement of 15% by leveraging transfer learning with ResNet18.
- **Designed** and implemented a custom CNN incorporating advanced techniques such as Convolutional Block Attention Modules (CBAM) and batch normalization, which enhanced feature extraction and boosted model performance.
- **Trained and fine-tuned** the model, optimizing it for real-world application and integration into diagnostic workflows.

Discrete FFT Visualizer | C++, DE1-SoC Board

April 2024

- **Developed** a C program for the DE1-SoC board to analyze and visually render the frequency spectrum of audio inputs or generated waveforms, improving auditory and visual analysis
- **Designed** a graph drawing algorithm and integrated multiple peripherals, including microphone, speaker, VGA display and more, enhancing user interaction and system capabilities.

HerWay Map

April 2024

- **Developed** a mapping application leveraging C++, EZGL, and Glade, incorporating Dijkstra's algorithm to generate optimal routes for safe night-time commutes, minimizing exposure to high-risk areas and maximizing security.
- **Engaged** with York Region Municipality government and local police to incorporate the application as a public service, aiming to improve community safety and security.

TECHNICAL SKILLS

Languages: C/C++, Python, Verilog, MATLAB

Developer Tools: Git, Google Cloud Platform, Visual Studio Code, Quartus, ModelSim

Hardware Platforms: Nios II Processor, DE1-SoC Board, Arduino, Raspberry Pi

AWARDS

Dean's Honour Roll (3)

2024

Schneider Electric Canada Scholarship (3)

2024

1st Place: SEEK Hackathon

2024

3rd Place: National SSCS Arduino Contest

2023

1st Place: UTEK Junior Design Competition

2023

First Year Summer Research Fellowship

2023