

# NIPUN SHUKLA

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## EXPERIENCE

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### Mozilla Corporation

June 2023 - Aug 2024

*Software Engineering Intern, Desktop Integrations*

Toronto, ON

- Simplified Firefox background updater by combining update staging and application in **C++** and **JavaScript** reducing background update time by **7 hours**
- Led and entirely implemented Firefox feature to automatically launch browser on OS login
- Developed back-end of Firefox Bridge browser extension in **Rust**, allowing users to switch between Chromium and Firefox seamlessly using native messaging on MacOS and Windows
- Developed Firefox taskbar tab-pinning extension, allowing users to pin websites to Windows taskbar in collaboration with WebExtensions team and team tech lead
- Proposed and led push to support Firefox pinning to Start Menu on Windows to increase user retention based on telemetry analysis in collaboration with core Product team

### Rocscience Inc.

May 2022 - Aug 2022

*Software Developer Intern*

Toronto, ON

- Developed ray-casting application to analyze differences between high-resolution 3D triangle mesh and polygon-reduced mesh using **C++/CLI** and **C#**
- Developed **C++** and **C#** application to convert proprietary binary triangle mesh file to common open formats
- Led team to develop HoloLens augmented reality application for manipulating complex 3D models

### Intelligent Sensory Microsystems Laboratory, University of Toronto

Nov 2021 - Jan 2022

*Student Researcher*

Toronto, ON

- Researched development of memristive neural network accelerators as a solution to the von Neumann bottleneck
- Analyzed the feasibility of using non-idealities in memristors as stochastic inputs for developing spiking neural networks (SNNs)
- Worked on a **Python** library combining the functions of both **Nengo** and **Memtorch** to aid with further development in memristive SNNs

## PROJECTS

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### Speech Emotion Recognition Model

Oct 2022 - May 2023

- Developed machine learning model to categorize emotions present in human speech
- Processed audio data into spectrogram using **Python** and **scipy** to provide input for model
- Trained convolutional neural network (CNN) created in **PyTorch**

### Autonomous Lawnmower

Jun 2018 - Sep 2019

- Designed, constructed, and programmed autonomous lawnmower using a **Raspberry Pi**, DC servo motors and ultrasonic sensors
- Planned multi-stage development and prototyping software using Gantt charts
- Designed chassis in **AutoCAD** and 3D-printed parts numerous times as part of prototyping process
- Programmed computer vision system in **Python** using both an algorithm for beginning of testing process and a convolutional neural network (CNN)

## EDUCATION

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### University of Toronto

Expected Apr 2025

*Bachelor of Applied Science in Computer Engineering*

Toronto, ON

## SKILLS

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### Languages

Assembly, C/C++/C#, Go, JavaScript, Python, R, Rust, Verilog

### Libraries & Tools

Git, MemTorch, Mercurial, Nengo, Pandas, PyTorch, SciKit, Simulink, Tensorflow

### Competencies

CAD, Cocoa (MacOS) Libraries, Win32 Libraries, Linux/Unix, Shell Scripting

### Interests

Astronomy, Soccer, Basketball, Movies