

Arnav Patil

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SUMMARY

Interested in **computer hardware/digital electronics** for **AIML hardware acceleration**. Open to positions in **FPGA engineering** and **ASIC design/verification**. Competent in **C++**, **Verilog**, and **Python**. Available for **4, 12, or 16 months** starting **summer 2025**.

EDUCATION

University of Toronto

Sept 2023 – Apr 2027

BASc. in Electrical and Computer Engineering

Toronto, ON

- **GPA: 3.54/4.00 (87%) with recognition on Dean's Honours List**
- **Extracurriculars:** IEEE UofT Student Branch, UofT Machine Intelligence Team, UofT Engineering Society

TECHNICAL SKILLS

Languages & Tools: **C/C++**, **Verilog**, **Python** (NumPy & pandas), **MATLAB**, **Git**, **LaTeX**

Hardware Courses: **Digital Systems**, **Computer Organization**, **Electronics**, **AC/DC Circuit Analysis**

Software Courses: **Object-Oriented Programming**, **Software Design**, **Computer Fundamentals**

EXPERIENCE

ML Compute Platform Developer

Sept 2024 – Ongoing

University of Toronto Machine Intelligence Student Team

Toronto, ON

- Developing a compute platform for UTMIST to optimize ML jobs using **GPU accelerated cloud computing**.
- Working with a team of developers to **deploy the platform** and establish **monthly feature release cycles**.

Sustainability Director

Apr 2024 – Ongoing

University of Toronto Engineering Society

Toronto, ON

- **Oversaw 7+ projects** to achieve directorship goals, from launching a student body-wide **Sustainability Policy** to divesting design teams from fossil fuel sponsors, and reducing the Engineering Society's footprint.
- **Organized** a research team to conduct a study of the Engineering Society's and Faculty's historical and present carbon footprint and practices, and collecting student voices for sustainability in the curriculum.

SELECTED PROJECTS

Blackjack Implementation on an FPGA | [Winner Winner Chicken Dinner!](#)

Nov 2024 – Dec 2024

- Developed a digital blackjack game using finite state machines (FSMs) on a DE1-SoC FPGA, handling **complex game states** such as dealing, betting, and scoring in real-time to **simulate card-counting experience**.
- Integrated PS/2 keyboard and VGA monitor as **input/output interfaces**, and off-chip SDRAM memory. Designed an **intuitive and responsive interface** directly on the FPGA.
- Wrote a Python script to reformat memory initialization files, **fixing compatibility issues between provided legacy tools and modern IP cores**.

Deep Learning Framework with NumPy | [Neural Network from Scratch](#)

May 2024 – Jun 2024

- Created a modular deep learning neural net framework from scratch using NumPy, and documented mathematical derivations of **forward pass**, **gradient descent**, and other relevant mathematical components.
- Solved the XOR using a network with two linear layers with **ReLU activation & MSE backprop** functions.

Personal Website | [Personal Portfolio Website](#)

Jun 2024 – Ongoing

- Customized a Hugo theme to **create a static portfolio website**, showcasing coursework and achievements.
- Deployed the site on GitHub Pages using a **continuous development pipeline** integrated into the repository through **GitHub Actions**, which automatically rebuilds and redeploys the site after each push.
- Integrated **Google Analytics 4** into the site to track insights and analyze which course pages are most popular.