Arnav Patil

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Education

University of Toronto Sept 2023 – Apr 2027
BASc. in Electrical and Computer Engineering with PEY Co-Op *Toronto, Canada*

- **GPA: 3.60/4.00** with recognition on Dean's Honours List
- Minor in Engineering Business

Technical Skills

Languages: C/C++, **Verilog**, **RISC-V Assembly**, **Python** (NumPy & pandas), MATLAB, Git, LaTeX
Hardware Courses: Computer Architecture, Analog & Digital Electronics, Digital Systems
Software Courses: Operating Systems, Embedded Programming, Object-Oriented Programming

Experience

FPGA Research Intern Feb 2025 – Ongoing
Department of Electrical and Computer Engineering, University of Toronto *Toronto, Canada*

- Researching at **Prof. Roman Genov's** Intelligent Sensory Microsystems Lab with the **CMOS Imaging Team**.
- Developing RTL and hardware-software co-design for FPGA-controlled computational time-of-flight imaging.
- Verification of current and previous ASIC schematics on Cadence Virtuoso to improve future tapeouts.
- Writing a custom Python API for user control, enabling rapid prototyping in computer vision experiments.

ML Compute Platform Developer Sept 2024 – Apr 2025
University of Toronto Machine Intelligence Student Team *Toronto, Canada*

- Developed a compute platform for UTMIST to optimize ML jobs using GPU accelerated cloud computing.
- Worked with a team of developers to deploy the platform and establish monthly feature release cycles.
- Wrote an API to create teams and users, and to access various cloud platforms and check GPU availability.

Selected Projects

NIOS-V Sonar System on an FPGA | Source Code Repository

- Integrated ultrasonic sensor and servo motor into the FPGA-based NIOS-V soft processor via GPIO ports.
- Designed & implemented BJT pull-up/pull-down networks for safe 3.3V-to-5V signal interfacing on FPGA.
- Engineered time-sensitive sensor polling using machine timer, avoiding interrupts for timing precision.

Blackjack Arcade Game on an FPGA | Presentation Slides

- 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.
- Wrote a **Python script** to reformat memory initialization files, fixing compatibility issues between provided legacy tools and modern IPs.

Extracurricular Activities

Sustainability Director Apr 2024 – May 2025
University of Toronto Engineering Society *Toronto, Canada*

- Oversaw 5+ projects, from launching a **Sustainability Policy** to divesting clubs from fossil fuel sponsors.
- 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.

First Year Engineering Class Representative Sept 2023 – Aug 2024
University of Toronto Engineering Society *Toronto, Canada*

- Represented 70+ students as a liaison between students, the Engineering Society, and the Faculty.
- Collaborated with EngSoc & Faculty members such as the Vice-President Academic, Vice-Dean First Year, and groups of professors to develop solutions enhancing more than 1400 first-year students' academic experience.