Arnav Patil

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Education

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

- **GPA: 3.60/4.00** with recognition on the Dean's Honours List
- **Minor in Engineering Business / Economics**
- **Awards:** UofT National Book Award, Alexander Rutherford Award, Royal Canadian Legion Medal of Excellence

Coursework

Languages: C/C++, **Verilog/SystemVerilog**, RISC-V Assembly, Python, MATLAB, Git, LaTeX
Hardware Courses: Computer Architecture, Digital Systems, Analog & Digital Electronics, Signals & Systems
Software Courses: Operating Systems, Embedded Programming, Data Structures & Algorithms
Math Courses: Probability, Multivariable Calculus, Linear Algebra, Complex Analysis, Microeconomics

Experience

FPGA Research Intern Feb 2025 – Present
Department of Electrical & Computer Engineering *Toronto, Canada*

- Researching at **Prof. Roman Genov's** Intelligent Sensory Microsystems Lab with the **CMOS Imaging Team**.
- Implementing SPI and I2C protocols in Verilog to interface with the integrated circuit and board peripherals.
- Achieved image sensor IC readout at above 800 Mbps, ideal for use in time-of-flight (ToF) imaging applications.

Teaching Assistant Incoming Sept 2025
Faculty of Applied Science & Engineering *Toronto, Canada*

- Facilitating 40-student tutorials for a first-year engineering orientation course, leading discussions on transitions to engineering studies and university life, time-management strategies, effective academic skills, and career pathways.
- Preparing 10+ weekly lessons and activities, providing formative feedback, and serving as a mentor for students.

Systems Design Engineer Sept 2024 – Apr 2025
University of Toronto Machine Intelligence Student Team *Toronto, Canada*

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

Selected Projects

Nios-V Sonar System | GitHub Repository

- Integrated an 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 voltage conversion between FPGA and sensor.
- Implemented polling using machine timer, calculating distance between $0.2 - 2$ m to within 1 cm of precision.

DE1-SoC Blackjack Arcade Game | Presentation Slides

- Developed a blackjack game on an FPGA, handling complex game states such as dealing, betting, and scoring.
- Wrote API-like "wrapper" RTL over Altera IP to simplify hardware peripheral control from top-level modules.
- Wrote a Python script to reformat memory initialization files (.mif), fixing compatibility issues in provided IP.

Extracurricular Activities

Member, Policies & Structures Committee Jun 2025 – Present
University of Toronto Engineering Society

- Supporting EngSoc's legislative foundation and deliberating on policies impacting a 5000-strong student body.

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

- Oversaw 5 initiatives, and wrote a Sustainability Policy to support discourse and action on environmental matters.