Mayan Saravanabavan

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EDUCATION

University of Toronto, BASc in Electrical Engineering + PEY Co-op **Expected Apr 2029**

SKILLS

Languages: Python, C, C++, HTML, CSS, Verilog, RISC-V Assembly
Technologies: Git, Quartus Prime, ModelSim, LTspice, Altium Designer
Lab Equipment: Oscilloscope, Function Generator, Power Supply, Digital Multimeter

EXPERIENCE

Undergraduate Research Assistant, CANUE **July 2025 – Present**

- Developed a Python web application enabling researchers to obtain custom geospatial health and climate data
- Designed a Streamlit interface for uploading locations and dates, selecting relevant datasets, and viewing outputs
- Incorporated time range and averaging controls to ensure outputs align with specific research needs
- Established CSV/XLSX file upload validation to standardise user inputs and reduce formatting errors
- Implemented PostgreSQL data retrieval logic using psycopg2 to dynamically query datasets based on user input
- Strengthened data accuracy by comparing 50+ outputs to database records and resolving discrepancies
- Authored clear descriptions for 32 environmental exposure metrics to support non-technical users

Team Member, UTWind **Sept 2024 – Present**

- Researched buck converter components to ensure reliable operation in a small-scale wind turbine
- Tested the buck converter circuit using LTspice simulations and multimeter measurements

PROJECTS

DE1-SoC Arcade Game

- Developed a Verilog-based asteroid-shooting game with real-time rendering on a 640×480 VGA display
- Configured PS/2 keyboard input handling to control ship movement via WASD and bullet firing via spacebar
- Architected a round-robin arbiter to coordinate VGA writes for the ship, bullets, and 16 moving asteroids
- Integrated bounding-box collision detection to identify ship-asteroid overlaps and trigger a game-over state
- Designed a projectile system with directional firing based on ship orientation and rate-limiting cooldown timers

Redesign Proposal for Chestnut Residence Building

- Evaluated HVAC, lighting, and window systems to diagnose energy inefficiencies across 2 building floors
- Proposed floor-level energy-efficient design improvements aligned with building performance goals
- Validated proposed designs using building energy modelling software, achieving a 2.3% overall energy reduction
- Created an HTML-based project website to communicate simulation methodology and results

Resume Builder

- Launched a web application using HTML, CSS, and JavaScript that generates custom resumes in under 5 minutes
- Implemented LaTeX file generation to produce professionally typeset resumes
- Configured GitHub Actions for continuous integration to automatically build and test code changes

Spotify Stats

- Developed a Python desktop application to display lifetime Spotify streaming stats from user-provided JSON files
- Designed a PyQt5-based GUI inspired by Spotify Wrapped to present listening data in a familiar format