Saptarshi Talukdar

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Skills

Programming: C/C++, Verilog, MATLAB, Python, Latex, HTML, Game Development
CAD/Design: Altium Designer, KiCAD, Solidworks, AutoCAD, Canva
Hardware: PCB Design, Circuit Design, Soldering, Breadboard Prototyping, Analog and Digital Electronics
Simulation/Software: LTSpice, ModelSim, Quartus Prime, Arduino IDE, VSCode

Education

University of Toronto **Sept 2023 – May 2027**
BASc Electrical Engineering, ***3.88 CGPA [Dean's Honors List, Top 30 ECE]*** *Toronto, Canada*
Coursework: C/C++, Verilog, Computer Organization, Hardware Design and Communication, Signals and Systems

Experience

RSX (Robotics for Space Exploration) **Sep 2024 - Present**
Member of the Electrical Team *Toronto, Canada*

- Designing a boost converter to power the rover's subsystems for the Canadian International Rover Challenge (CIRC)
- Utilized the TPS43060 IC to achieve high efficiency and reliability in the synchronous boost converter design
- Created the PCB layout for the converter using KiCAD, optimizing for performance and manufacturability

Damaged Lithium-Ion Battery Enclosure (Toronto Fire Services) **Jan 2024 – Apr 2024**
Editor in Chief *Toronto, Canada*

- Designed an enclosure to transport damaged lithium-ion batteries to disposal facilities, addressing hazards
- Served as Editor in Chief, managing documentation, references, and citations while leading the team through challenges
- Delivered a successful project presentation to the client, Toronto Fire Services, meeting requirements and expectations

Projects

Asteroid Destroyer Game | *C++, SFML, VSCode, Game Development* **Jan 2025**

- Developed a version of the arcade game Asteroids in C++ using Visual Studio Code and the SFML multimedia library
- Built game physics, including keyboard-based controls, random obstacle generation, and collision detection from scratch
- Successfully created a visually engaging game with interactive gameplay rendered in a separate window
- **Project Link:** github.com/SattiDaBeaver/Asteroid-Destroyer

Flappy Bird on DE1-SoC FPGA | *Verilog, Quartus Prime, Hardware Design* **Nov 2024 – Dec 2024**

- Built a version of the Flappy Bird game on the DE1-SoC FPGA using Verilog and Quartus Prime
- Designed the game logic, VGA adapter, and PS/2 keyboard driver for seamless gameplay
- Presented the project with a PowerPoint, showcasing the game on a VGA display with keyboard controls
- **Project Presentation Link:** github.com/SattiDaBeaver/Flappy-Bird-on-DE1-SoC

Waveform Generator | *Arduino, Analog Electronics, Circuit Design* **May 2024 – Jul 2024**

- Designed a portable USB-C powered waveform generator using AD9833 IC and ATMEGA328P microcontroller
- Developed an OLED interface for waveform selection and frequency display, and wrote the microcontroller code
- Documented the design process and published a step-by-step guide on Instructables
- **Project Link:** instructables.com/DIY-Portable-Waveform-Generator-USB-Powered/

FabRIC (Fabricable Rapidly Iterable Circuits) | *Altium, Arduino, Digital Electronics, Breadboard* **Dec 2023**

- Designed hardware for a Jumperless Flexible Breadboard using crosspoint switch arrays controlled by an Arduino Nano
- Built a breadboard prototype, tested signal integrity up to 10 MHz, and designed a flexible PCB using Altium Designer
- Presented the project to University of Toronto professors to gain feedback and guidance for future development

Awards and Achievements

Dean's Honours List

- Achieved a GPA of 3.88/4.0, earning a place on the Dean's Honours List for the Fall 2023 and Winter 2024 semesters

Top 30 in ECE Department

- Ranked among the top 30 students in Electrical and Computer Engineering Department; attended ECE Awards Dinner