ISHAN JOSHI

Computer Engineering Student

4th year - University of British Columbia

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SUMMARY

I am an innovative and results-driven individual who always strives for success and excellence. My experience has sharpened my professional development skills, teamwork, and leadership, complemented by strong technical abilities gained from extracurricular activities.

SKILLS

Languages: C, C++, Java, Python, SQL, asm (x86, ARM), SystemVerilog, HTML, CSS, Javascript.

Technologies: FreeRTOS framework, Cadence (Synth, Virtuoso, Layout), FPGA programming

EDUCATION

9/2020 - 4/2025 **Computer Engineering - Bachelor of Applied Science** — **University of British Columbia**

Dean's Honour List – 2021 & 2022

Relevant Coursework: Digital Systems Design (100%), Microcomputers (95%), Algorithms (94%), Computer Communications (91%), Computer Architecture (current), VLSI (current), Operating Systems (current).

EXPERIENCE

9/2021 – Present **Embedded Firmware Team Lead** — **UBC Solar**

- Leading team of 8 for the development and validation of C firmware for STM32 microcontrollers in key vehicle systems, leveraging ADC, CAN bus, Interrupts, and HAL for our 3rd generation solar car.
- Enhanced system performance and multitasking efficiency by applying FreeRTOS architecture to suitable components including the Main Control Board and Telemetry Board.
- Developed a linux-based telemetry system *Sunlink* in python to post data to InfluxDB using encrypted HTTP messages and stream live data to Grafana dashboards.
- Firmware: github.com/UBC-Solar/firmware_v3 Sunlink: github.com/UBC-Solar/sunlink

9/2022 – 4/2023 **Teaching Assistant: CPEN 212 & CPEN 211** — **Department of Electrical and Computer Engineering, UBC**

- CPEN 212: Facilitated project evaluations and conducted office hours, providing guidance on computer architecture, hardware/software interfaces, and memory management to assist students' understanding.
- CPEN 211: Partnered with colleagues to offer structured office hours, addressing inquiries related to digital circuit and microprocessor hardware design, SystemVerilog, and ARM assembly coding.

5/2022 – 12/2022 **Firmware Test Engineer Intern** — **NETINT Technologies Inc, Burnaby, BC**

- Worked closely with architects, ASIC design, and firmware engineers to ensure the successful implementation and verification of firmware for several products. Used Jira for agile development.
- Developed Python/Shell test scripts for automated design verification through Jenkins, including compliance testing as well as running HIL tests to validate firmware in a simulated environment.
- Worked with MySQL database to automate result storing and parsing for summary & report generation.
- Gained understanding of video codec, formats, FFmpeg and Gstreamer video command-line tools.

PROJECTS

C, assembly **OS161 Operating System**

- Implemented parts of the OS161 operating system, including synchronization primitives and system calls such as fork, execv, waitpid, read, write, open, close, lseek, dup2, and more.
- Achieved excellent understanding of the workings of a UNIX-like operating system and kernel processes.

C++, ChampSim Simulator **Cache Replacement Policies & Pipeline Friendly Code**

- Executed multiple cache replacement strategies (LRU, LIP, DIP, BIP, PLRU) to optimize hit rate.
- Implemented pipeline and cache-friendly matrix-multiplication code for the ChampSim simulator.

SystemVerilog, DE1-SoC FPGA **Simple iPod on FPGA**

- Implemented Finite State Machines to read flash memory and PS2 keyboard input to play sound samples output from a given digital-to-analog converter and control song playback on an FPGA.

SystemVerilog, Cadence Encounter **Home Security System: Custom FSM + Place and Route**

- Designed and implemented a custom Finite State Machine modelling a home security system, executing the standard-cell layout using place and route techniques in Cadence Encounter.

AWARDS

- Dean's Honour List, 2021 & 2022
- MacKenzie Swan Memorial Scholarship, 2022
- Jim and Helen Hill Memorial Service Award, 2022
- Graduating Class of Electrical Engineering 1971 Service Award, 2022

LANGUAGES

- **English**: fluent
- **Marathi**: fluent
- **Hindi**: proficient
- **Spanish**: proficient