Vedant Gupta

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An aspiring Computer Engineer studying at the *University of Toronto* with a keen interest in software development and engineering design. Looking for 12-16 months co-op opportunities.

Education

Major: Computer Engineering **Minor**: Engineering Business, Artificial Intelligence

Bachelor of Applied Science and Engineering

Full-time student at the ***University of Toronto***

Dean's Honour List Fall 2020, Winter 2021, Winter 2023, Fall 2023, Winter 2024

GPA: 3.62

Relevant Coursework: Software Communication and Design, Programming Fundamentals, Engineering Strategies and Practice I & II, Computer Organization, Operating Systems, Data Structures and Algorithms, Deep Learning, Computer Networks, Digital Electronics

Technical Skills

- Programming: **C, C++, Python**, SQL, JavaScript, HTML, CSS, ARM Assembly, MATLAB, VERILOG, Bash
- Tools: Git, Linux, Simulink, Quartus Prime, Logisim, ModelSim, LTSpice, Word, Excel, PowerPoint

Relevant Experience

Software Engineer Intern at Siemens EDA (May-July 2023)

- Worked on converting a **bash script** of more than a thousand lines into C++ code
- Worked with a number of bash commands including awk, grep, sed, cat
- Used system calls and covered file handling to replicate various bash commands in C++
- Used knowledge of **Object-Oriented programming (OOP)** to create a singleton class to manage all functions and variables of the file
- Worked with the BoostBuild library to compile the code by writing a Jamfile

Geographic Information System Application (2023)

- Created a mapping application in a team of three with innovative features catered towards university students to help them quickly navigate on-campus
- Gained **development experience** in a **dynamic environment**: explored **graphic libraries** such as EZGL and GTK widgets using the OpenStreetMap database to extract and render information on the map. Implemented features such as a search bar with an auto-complete feature, subway paths using OSM data, displaying paths and printing directions upon receiving input (from either entering in search box or clicking on the map at 2 points)
- Implemented **path-finding algorithms** such as Dijkstra's and A* to find efficient map routes. Also learned about other optimization algorithms like 2-opt, and simulated annealing. Ended being in the top 50 in the class
- Implemented a number of data structures including vectors, unordered maps, priority queues, and heap

16-bit Processor (2023)

- Created a 16-bit processor (in Verilog) similar to the ARM Cortex A9 processor with instructions such as mov, sum, sub, str, ldr, push, pop through knowledge about the finite state machine and operations at the different clock cycles of a processor
- Built a basic calculator on the processor which interacts with I/O devices including switches, HEX LEDs, and keys present on the FPGA

Billboard Hit Predictor (2024)

- Predicts a song's likelihood of landing on the Billboard Hot 100 by analyzing the last 5 years of the chart's historical data
- An mp3 audio file from the data set is transformed into a visual mel-spectrogram. This is used as the input to RNN and CNN architectures working in parallel to finally combine the output to a binary yes/no as the answer to the hit song classification problem

Other projects

- **Python**: Snake game, turtle crossing game, pong game, pomodoro, US states game. Implemented various games using libraries including turtle and pandas