Gavin Vasandani
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Education

Imperial College London, Master of Engineering, Computer Engineering (EIE) **Oct 2021 - Jun 2025**
- Combined degree in Department of Electrical Engineering and Department of Computing.
- Achieved First Class honours in 1st and 2nd year with top marks in Mathematics, Control Systems and Compilers.
- Relevant Modules: Advanced Computer Architecture, System Performance Engineering, Algorithms and Complexity, Databases and Networks, Instruction Architectures and Compilers.

Emirates International School Jumeirah, Dubai, United Arab Emirates **Sep 2006 – Jun 2020**
- IB Diploma Program – Total Points: 42 – HL: Mathematics (7), Physics (7), Chemistry (7)

Professional & Research Experience

AMD (Advanced Micro Devices) Inc., *Software and Hardware Engineering Intern* **Jun 2023 – Oct 2023**
- Intern in the Platform IP team within AMD's Adaptive and Embedded Computing Group.
- *Project 1:* Created SystemVerilog and C++ testbenches to verify CMS Subsystem IP which is responsible for monitoring AMD Alveo Acceleration Card performance and communicating interrupts from host CPU.
- Verified IP on 5 major simulators (XSim, VSA, Riviera) using internal tools (VIPER) and committed to Vivado 2023.2
- *Project 2:* Deployed a script to generate randomized YAML configuration files for the CMS Subsystem IP, accelerating time to reach complete functional coverage.

Provise Cybersecurity Firm, *Software Engineering Intern* **Jun 2022 – Oct 2022**
- Software Engineering Intern building inhouse tools for the Archer Platform.
- Tools helped evaluate cybersecurity threats for major telecom, banking, and energy firms.
- Worked collaboratively with other engineers including the Chief of Research and Development.

Jane Street IN FOCUS, *Software Engineering Track* **Apr 2022 – May 2022**
- Selected as 1 of 15 to partake in Jane Street's Spring IN FOCUS Software Engineering program.
- Learned fundamental concepts of functional programming and developed backend of a snake game in OCaml.
- Created a trading bot in C++ that exploits discrepancies in the price of an ADR pair. Determined ADR's fair value through moving average and fluctuations in exchange rate. Achieved 6th in Jane Street's ETC.

Institute of Photonic Sciences, Quantum Computing and Engineering, *Student Research Intern* **Jun 2019 – Aug 2019**
- Selected as a student for the Barcelona International Youth Science Competition(BIYSC), where I worked and was lectured at the Institute of Photonic Sciences (ICFO) under Dr. Emilio Pisanty.
- Researched wave deflection properties and used half wave plates to build a quantum-encryption machine.

NASA Wallops Flight Center, Satellite Projects, *Student Research Intern* **Jun 2018 – Sept 2018**
- Research on the use of nitrogen-doped double-walled carbon nanotubes for radiation shielding in manned spaceflight.
- Project was selected by Cubes in Space & NASA and launched on their RB-4 research satellite from NASA Wallops Flight Center, Virginia, USA, to higher Earth Orbit as part of the Cubes in Space Competition.

Projects & Awards

RISC-V Processor (SystemVerilog, C++)
- Designed a RISC-V processor with its complete instruction set architecture and improved processor efficiency by implementing 5-stage pipelining and 2-way associative cache with LRU replacement.

C90 to RISC-V Assembly Compiler (C, Assembly)
- Developed C90 to RISC-V assembly compiler with support for control flow, arrays, recursive functions as well as integer and floating-point arithmetic.
- Optimized memory allocation by tracing through program to determine required memory and created a stack simulator to manage memory pool.

C++ Trading Platform (C++, Bash)
- Developed a multi-client, server trading platform using Asio Networking Library with custom memory management.
- Created and hosted price-time priority orderbook with pro-rata matching.
- Simulated market liquidity by creating market maker bots to provide buy and sell orders at a stock's fair value.

Self-balancing 2-Wheeled Autonomous Rover (C, JavaScript w/ Node.js)
- Collaborated in 4-member team to create a self-balancing 2-wheeled autonomous rover.
- Developed multithreaded C++ program on ESP32 dual-core microcontroller to retrieve sensor data and predict motor movement in parallel.
- Implemented software interrupts and ISR's for immediate motor movements in response to sensor readings, enabling real-time balancing.

Winner of NASA's Cubes in Space Competition
- Chosen as 1 of 200 students from 20,000 applicants to send their research project on NASA's RB4 Research Satellite.

Part-time work

Peer Tutor for Mathematics 1 module
- Chosen as a peer tutor for the Mathematics 1A&B modules based on Year 1 performance.

Programming Languages

Confident with: C++, MATLAB, Swift

Limited Experience: OCaml, Python, System Verilog, SQL