

Ishan S. Vyas

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EDUCATION

Duke University **Durham, NC**
Expected BSE in Electrical & Computer Engineering, Tau Beta Pi Society, GPA 3.99/4.0 *May 2026*

- Dean's List with Distinction: Fall '23, Spring '24, Fall '24, Spring '25
- Grad. Courses: Comp. Arch. & Hardware Acceleration, Atomic Quantum Engineering, Quantum Mechs.
- Undergrad. Courses: FPGAs & Digital Systems, Microelectronic Devices & Circuits, Signal Processing

PROFESSIONAL EXPERIENCE

Cleveland Clinic Research, BioRobotics Core **Cleveland, OH**
Computer Engineering Intern *May 2025 - Present*

- Implemented algorithm to track system instability with 100x runtime improvement over existing solution
- Created 85% accurate ML algorithm for robotic force control generation for biomechanical gait analysis
- Engineered full stack PLC controller for tactIO 6-DOF robot with intuitive, no-training operation
- Developed FFT-based preprocessing pipeline for 400+ Bertolotti trials, accelerating biomarker discovery

Intel Corporation **Hillsboro, OR**
Module Engineer Intern *May 2024 - Aug 2024*

- Compiled and analyzed data to approximate load size effect on wafer thickness using JMP
- Expanded tool monitoring system by integrating preventative maintenance recipes, reducing tube flaking
- Reviewed 100+ papers on advanced deposition techniques and presented recommendations to 8 engineers

R.E. Warner & Associates **Westlake, OH**
Substation Electrical Design Intern *May 2023 - Aug 2023*

- Managed IEEE-compliant design on high voltage substation upgrades valued at \$250,000
- Led design on pilot program to protect substations from high-altitude EMPs, est. value \$50,000

Mercury Biomed **Pepper Pike, OH**
Economic Development Intern *Jun 2022 - Aug 2022*

- Built 7-year financial model projecting revenue, COGS, and overhead for a \$5M medtech firm

EXTRACURRICULAR INVOLVEMENT

Duke University APEX Lab **Durham, NC**
Hardware Acceleration Researcher *Oct 2024 - Present*

- Wrote C++ scripts and testbenches for a newly published systolic array & TPU simulation

Duke Electrical & Computer Engineering **Durham, NC**
Teaching Assistant - ECE 110: Electrical and Computer Engineering Fundamentals *Jan 2024 - May 2024*

- Led office hours and graded homeworks for 35 students on all course topics
- Taught 2 full 80-minute lectures on Thevenin's & Norton's theorems and Boolean Algebra

PROJECTS

Epidemic Simulation Accelerator ishansvyas.github.io/portfolio/covasimplify.html

- Designed a Python-accessible FPGA accelerator that executes agent-based epidemic simulations
- Implemented a stream-processing architecture with double-buffered memory at 2x speedup vs. CPU

Verilog MIPS CPU ishansvyas.github.io/portfolio/mips.html

- Programmed 100 MHz 5-stage pipelined MIPS CPU using Structural Verilog on Xilinx FPGA
- Implemented bypassing, hazard detection, branch prediction, and multi-cycle multiplication and division

SKILLS & INTERESTS

Technical Skills: Git, Altium Designer, Cadence PSPICE, AutoCAD Electrical, FPGAs, Test Equipment
Programming Languages: Java, C, C++, Python, MATLAB, R, Verilog, Chisel HDL
Interests: European Soccer, Cooking, Photography, Violin, Reading, Travel (e.g., Laos, Chile)