

# RITI SINGH

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Electrical and Computer Engineering Student | Dartmouth College Class of 2027

Junior Electrical & Computer Engineering student at Dartmouth College with hands-on experience in embedded firmware, FPGA design, and hardware-software integration. Proficient in C/C++, VHDL, and microcontroller-based systems (STM32). Seeking a Summer 2026 Embedded Systems / Firmware Internship.

## Skills & Technical Proficiencies

**Programming & Firmware:** C, C++, Embedded C, Python, MATLAB, Bash, VHDL / Verilog

**Embedded Systems & Hardware:** STM32 microcontrollers, PWM control, ADC sensing, UART, I<sup>2</sup>C, FPGA design, finite state machines, PCB design

**Tools & Debugging:** Git, gcc, make, gdb, valgrind, CAD tools

**Systems Knowledge:** Digital logic, circuit analysis, systems & controls, hardware testing & validation

**Languages:** English (Fluent), Hindi (Fluent), Spanish (Conversational)

**Certifications:** CITI Responsible Conduct of Research; CPR / First Aid / AED

## Technical & Research Experience

**Electrical & Circuits Lead, Business Lead,**

**Mar 2024–Present**

**Smart Sort (Magnuson Center Social Venture)** – Hanover, NH

- Designed, tested, and iterated PCB layouts and embedded control circuitry for a sensor-driven waste-sorting prototype
- Integrated microcontrollers, sensors, and power systems, focusing on reliability, durability, and scalability across real-world environments
- Evaluated engineering trade-offs across power consumption, cost, and performance in collaboration with cross-functional stakeholders

**AI Systems & Validation Team,**

**Sept 2025- Present**

**EvergreenAI, Dartmouth College** – Hanover, NH

- Participated in system validation and user testing of an AI-driven chatbot supporting student mental health services
- Generated structured training datasets and contributed to testing workflows to evaluate system reliability and failure modes
- Presented analysis and findings to faculty and project stakeholders

**Research Fellow, Dartmouth College,**

**June 2024–Sep 2024**

**EE Just Research Fellowship, Dartmouth College** – Hanover, NH

- Built custom data collection pipelines using APIs and scraping tools to analyze large-scale recommendation systems
- Applied statistical and computational methods to identify bias and drift in algorithmic systems
- Presented technical findings at research seminars and applied ethics forums

## Projects

### FPGA / Digital Design (VHDL)

- Designed and simulated FPGA datapath and control modules in VHDL for arithmetic computation
- Implemented and verified finite state machines and timing behavior using simulation and testbenches

### Embedded Systems (STM32, C)

- Programmed STM32C031 microcontroller in C for PWM control, ADC sensing, and I<sup>2</sup>C communication
- Developed low-level firmware for real-time sensor data acquisition and processing

### Software Systems (C)

- Built modular C programs using pointers, dynamic memory allocation, and file I/O
- Debugged memory and performance issues using gdb and valgrind; used gcc and make for build automation

## Education

### Bachelor of Engineering (B.E.), Electrical Engineering

Dartmouth College — Expected June 2027

**GPA: 3.76 / 4.00** | Honors: College Honors List; Philip R. Jackson Award

**Relevant Coursework:** Digital Electronics; Embedded Systems; Systems & Controls; Electromagnetism & Waves

## Leadership & Community Engagement

**CORE Risk Manager** — Kappa Delta Epsilon (KDE), Hanover, NH **June 2024 – Present**

- Oversaw risk management and safety compliance for chapter events; coordinated with campus safety and student support offices
- Trained members on harm-reduction practices and incident response procedures

**Outreach & Support Team Lead** — Sexual Assault Peer Alliance (SAPA), Hanover, NH **Jan 2024 – Present**

- Led prevention initiatives and survivor support programs; recruited and trained 50+ peer advocates

**Youth Representative, Board of Directors & Peer Counselor** — BLOOM365, Phoenix, AZ **Aug 2019 – June 2023**

- Led community education and statewide awareness campaigns on healthy relationships and violence prevention
- Provided crisis intervention and mental health support via hotline and school-based outreach

## Honors & Awards

Philip R. Jackson Award (Dartmouth, 2024); NSDA Academic All-American; Congressional Leadership Award (2022); JA Arizona “18 Under 18”