Ronit Sharma

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Education

Shrewsbury High School, Shrewsbury, MA — Expected June 2027

Coursework: AP Physics C, AP Calculus BC, AP Computer Science A, AP Statistics, AP Biology, PLTW Cybersecurity, Mathematical Modeling, Research Methods (Honors)

Independent study: machine learning and the linear algebra behind it, through Welch Labs' *Illustrated Guide to AI*

Research Experience

Research Student – Perception and Autonomous Robotics (PeAR) Group — May 2026 – Present

Worcester Polytechnic Institute, advised by Prof. Nitin Sanket

- Built a 3D Gaussian-splat reconstruction of the lab's flight space and trained nine reinforcement-learning policies for a quadrotor in it, with a Vicon motion-capture system supplying real-time pose.
- Traced a flight problem first blamed on the drone's design to a bug in my own Vicon pose-parsing code, and fixed it.
- Designed a drone prototype in Onshape; debugged Crazyflie radio communication (Crazyradio PA) with the cflib Python library.

Inventor – 48V DC Residential Electrical System — Sep 2024 – Present

U.S. Non-Provisional Utility Patent Application, filed Aug 2026 (provisional filed 2025); sole named inventor

- Wrote the 50+ page specification, the claims, and all 12 drawings for a low-voltage DC home power system whose central hub also serves as a Matter-compatible smart-home controller.
- Built Python energy simulations estimating $\sim$18% lower energy loss than an AC home running on solar.
- Redesigned conductor sizing after an electrician judge at the school science fair showed the wiring was undersized for the higher current at 48V; filed the application on the corrected design.
- Modeled the prototype, switches, hub, and a new outlet (in progress) in Onshape; built a working model prototype.

Engineering and Robotics Experience

FIRST Robotics Competition – Senior Programmer, Team 467 — Sep 2024 – Present

Shrewsbury High School

- Write robot code in Java with WPILib's command-based framework; built state-space control for the shooter using LQR and Kalman filtering, calibrated the swerve drive, and added driver haptic feedback for intake commands.
- Competed at the 2025 FIRST Championship in Houston; team won the FIRST Impact Award at the Western New England District Event (Mar 2025), with the middle-school robotics club I founded as part of the outreach behind it.

FIRST Tech Challenge – Founder and Programming Mentor, Team 37630 "Potential Energy" — Mar 2026 – Present

Shrewsbury High School

- Founded the school's FTC team: secured school approval and a faculty advisor, recruited 12 students, and raised $10,000 from local sponsors and fundraisers for the rookie season.
- Teach Java and FTC programming together to 12 students with no prior coding experience; built the starter codebase, run weekly sessions with programming assignments, and taught PID control for the shooter.

Founder and Mentor – Sherwood Middle School Robotics Club — Sep 2024 – Dec 2025

Shrewsbury, MA

- Founded and mentored a 45-student middle-school robotics club running weekly FIRST LEGO League sessions, plus a summer program.

Leadership and Community Engagement

Co-Founder and Executive Director – Tech Awareness Association — Jan 2024 – Present

Shrewsbury, MA area

- Co-founded a 501(c)(3) nonprofit teaching device repair, e-waste reduction, and digital literacy; runs weekly Sunday repair classes at the Shrewsbury Public Library makerspace and workshops at the Southgate senior center, with 72+ workshops held.
- Expanded to five towns with 22 volunteers and raised $20,000; when the first new chapter drew no attendance, trained its student leaders in repair and outreach until they ran full weekly sessions on their own; wrote a chapter replication guide.
- Diverted 500 devices and 1,500+ lbs of e-waste from landfills through community e-waste drives; coordinated a 110-device corporate donation (Granite Gives Back), handling transport, triage, and resale.
- Secured donated iFixit Pro Tech Toolkits and repair mats for workshops; launched Worcester Laptops for Learning, which drew 40 student applications for refurbished laptops; now reselling donated desktops to fund its restart.

Volunteer and Tutor – WooServes Summer Youth Service Institute — Summers 2023 – 2026

Worcester, MA

- Volunteered about 120 hours over 40 Saturday shifts across four summers at food pantries, homeless shelters, and youth tutoring programs, including distributing food at the El Buen Samaritano food program.
- Volunteered at Pernet and connected it to collect items from a Tech Awareness Association e-waste drive.

Varsity Tennis Player — Spring 2024 – Spring 2025

Shrewsbury High School

- Played varsity in 9th and 10th grade; continue competing in USTA tournaments.

Work Experience

Founder – Coco Labs (Phone Repair) Sep 2023 – Present
Shrewsbury, MA

- Run a paid phone-repair business across 120+ repairs, progressing from screen swaps to board-level microsoldering and IP68 water-resistance reseals; diagnose, quote, source parts, repair, and test every device.
- Started as a fabrication shop with a Prusa Mini 3D printer, laser engraver, and Cricut.

Cybersecurity Intern (Paid) – Work-Based Learning Alliance Summer 2024
Remote

- Audited companies' websites for DDoS vulnerabilities as part of cyber-risk assessments.

Selected Projects

- **2Failure – Fitness App (Co-Founder, Jun 2026):** Built an app that detects training failure by combining Apple Watch heart-rate spikes and accelerometer motion with user input, alongside Apple Health sleep data, calorie and protein tracking, and AI-generated progressive-overload workouts. Live on iOS and Android with ∼20 users.
- **Gras2027 / Pixels2027 – Browser Game Platform (Jan 2024):** Solo-built and scaled a collection of open-source HTML5 and React games to 55K users, 537K views, and 1.7M events; monetized with ads, peaking at $1K/month.
- **Options Trading and Stock_Ledger (2023 – Present):** Analyzed 82 of my self-directed options trades and found a quarter of losing trades caused 55% of losses; wrote a seven-step review process that raised my win rate from 58% to 79%. Keep Stock_Ledger, a stock-research ledger, since 2024.
- **sat2048.app (Jun 2026):** Built an SAT vocabulary game in the style of 2048 with a teacher dashboard; 100+ users, including classmates and teachers in Chicago.
- **NSRI Research Hackathon – Etosha Ranger Patrol Model (Jul 2026):** With a four-person team, modeled ranger patrol routes in Etosha National Park for the most land coverage per unit of fuel at a fixed vehicle fuel economy. Best Environmental Project; 13th of 1,000+.
- **E-Waste Disassembly Robot (in progress):** Designing a robot to inspect used laptops, destroy storage, and salvage reusable parts for repair shops; building the arm from the robotics team's retired 2018 motors.
- **OpenH2O (openh2o.app):** Built a client-side AI tool that estimates a user's water and carbon footprint, run under Tech Awareness Association.
- **Macintosh 512K Restoration:** Diagnosed a 1984 Macintosh that shut down within a minute of powering on; safely discharged the ∼12,000V CRT and replaced the failed capacitors to restore it.
- **ronitsharma.com:** Built and maintained my personal site since 5th grade, from hand-written HTML/CSS to React.

Honors, Awards, and Media

- FIRST Championship (Worlds) competitor, Houston – FRC Team 467 (2025)
- FIRST Impact Award, Western New England District Event – FRC Team 467 (Mar 2025)
- Best Environmental Project and 13th of 1,000+, NSRI Research Hackathon (Jul 2026)
- Profiled in the *Community Advocate* for the patent application, Tech Awareness Association, and ronitsharma.com (Sep 2026)
- Guest, *The Professor Kev Show* podcast, on device repair and e-waste with Tech Awareness Association (Aug 2026)
- National Honor Society; Mu Alpha Theta

Technical Skills

Programming: Python, Java, Swift, JavaScript/React, HTML/CSS
Robotics and Research: ROS, Reinforcement Learning, 3D Gaussian Splatting, Vicon Motion Capture, Crazyflie (cflib), PID and State-Space Control, Swerve Drive
CAD and Fabrication: Onshape, Tinkercad, 3D Printing, Laser Engraving
Electronics and Repair: Phone Repair (diagnosis, disassembly, battery/screen/port replacement), Soldering and Microsoldering, Multimeter Diagnostics, Capacitor Replacement, CRT Discharge