

TONY CHEN

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SUMMARY

Electrical and computer engineering student with hands-on experience across the full design cycle — CAD modeling, 3D printing and CNC machining, embedded programming, and testing. Led a competitive FTC robotics team through design, fabrication, and funding. Strong quantitative foundation in calculus, linear algebra, differential equations, and calculus-based physics.

EDUCATION

University of California, Los Angeles

Expected 2030

B.S., Electrical and Computer Engineering

Shady Side Academy — Pittsburgh, PA

2022 – 2026

GPA: 4.07 / 4.00

- National Merit Semifinalist (Pennsylvania); PSAT 223
- ACT 35 composite (36 Math, 36 English, 35 Reading, 31 Science); SAT 1520
- AP Calculus BC (5), AP Computer Science A (5), AP Physics C: Mechanics, AP Physics C: E&M
- Advanced coursework: Linear Algebra, Differential Equations, Calculus-Based Physics II, Aerobatic Robotics

TECHNICAL SKILLS

Programming: Java, Python

CAD / CAM: Autodesk Fusion 360 — full-assembly modeling, part design, CAM toolpaths

Fabrication: FDM 3D printing (plastic parts), CNC milling (metallic parts), mechanical assembly

Electronics: Brushless/brushed motor drive, electronic speed controllers, stepper motor control, LiPo power systems

ENGINEERING PROJECTS

Automated Tracking Telescope

2025 – 2026

- Designed a telescope that automatically locates and tracks deep-sky objects using two stepper motors on independent axes.
- Engineered a camera attachment for long-exposure astrophotography plus swappable eyepieces for variable magnification.
- Developed a shutter system for brightness control, targeting 200x magnification sufficient to resolve Jovian bands and Saturn's rings.

Custom Remote-Controlled Race Car — Designer and Builder

2024 – 2025

- Designed and built a 3D-printed RC car with a dual-motor drivetrain, independent electronic speed controllers, and a shared 5200 mAh 11.1 V LiPo pack.
- Implemented Ackermann steering geometry so inner and outer wheels track at distinct optimal angles, reducing turning radius and eliminating tire scrub in cornering.
- Specified a 15° caster angle to generate self-aligning torque, improving straight-line stability at speed and steering return after turns.
- Combined 3D-printed structural parts with sourced end rods and rod-end joints for load-bearing linkages.

Competition Electric Vehicle

2024 – 2025

- Designed and built an electric vehicle optimized for maximum speed while stopping within centimeter accuracy of a target distance — balancing acceleration against controlled deceleration.

LEADERSHIP AND ACTIVITIES

Leader, Robotics Club and FTC Team — Shady Side Academy

2023 – 2026

- Sole club leader: recruited and organized teams, ran fundraising, and directed planning, design, build, programming, and competition operations.
- Drove recruiting to roughly 80 signups from a 600-student school at the annual club fair.

- Modeled the complete robot chassis from scratch in Fusion 360 using goBILDA components — introducing a formal CAD design phase the team had previously lacked.
- Closed the equipment funding gap by organizing a crowdfunding campaign and team bake sale, raising roughly \$600 for the build kit.
- Programmed robot control code in Java.

Computer Science Departmental Associate — Shady Side Academy

2025 – 2026

- Selected as one of five students to represent the CS department at school events, tutor peers, and promote computer science programs.

Writing Center Scribe — Shady Side Academy

2025 – 2026

- Admitted as 1 of 20 applicants to the Theory and Process of Writing course and selected to serve as a writing center scribe.

Science Olympiad — Pennsylvania

2024 – 2026

- Competed in Bungee, Material Science, Electric Vehicle, Dynamic Planet, and Optics at Penn State, Solon High School, and University of Pennsylvania invitationals.
- 3rd place, Bungee — Penn State University Invitational (Feb 2025); 3rd place, Dynamic Planet — Solon Invitational (Feb 2025).

MUSIC AND ATHLETICS

First violin, Pittsburgh Youth Philharmonic Orchestra (2019 – 2026); ABRSM Piano Grade 8, Distinction (2024); ABRSM Music Theory Grade 5, Distinction (2023); piano since 2014, violin since 2018.

Junior Varsity soccer, basketball, and track & field (100 m, long jump), 2022 – 2026.