Yeowon Yoon

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EDUCATION

Troy High School| Student   Aug 2022 – Present

- **12th GPA:** 3.95 unweighted, 4.72 weighted
- **AP Scores:** AP Computer Science Principles (5) - Perfect Score Recognition, AP Computer Science A (5), AP Calculus BC (5), AP Statistics (5), AP Physics 1 (5), AP Physics 2 (5), AP Physics C Mechanics (5), AP Physics C Electricity and Magnetism (5), AP Chemistry (5), AP Biology (5), AP World History (5), AP US History (5)
- **SAT:** 1550 (Math: 800)
- **ACT:** 34
- **Dual enrollment @ CSUF:** Math 250A-Calculus III, Math 250B-Linear Algebra and Differential Equations, Math 335-Mathematical probability, Math 438-Stochastic Process, Math 320-Mathematical Computation

PREPROFESSIONAL EXPERIENCES

Machine Learning Troy Tech Intern   June 2025

Prof. Joshua Tallman, Concordia University Irvine

- Built a full-stack machine learning model for network intrusion detection using NetFlow data (NF-UNSW-NB15).
- Engineered features and trained a Random Forest classifier (99% accuracy, 91% recall) alongside a Feedforward Neural Network.
- Deployed results through an interactive web dashboard; project adopted into Professor Tallman's curriculum for instruction.

MIT Beaver Works Medyletics Program   July 2025

MIT Lincoln Laboratory – Beaver Works Summer Institute

- Participating in a 4-week program focused on AI in medicine and healthcare applications.
- Coursework includes predictive modeling, data preprocessing, and evaluation metrics using Python, NumPy, TensorFlow, and Git.
- Developed app NeuroPlay, developing FNN and RF classifier to detect Parkinson's disease through an interactive game that detects biomarkers of neurodegenerative diseases
- Co-authored and published a peer-reviewed paper at the MIT Undergraduate Research Technology Conference (URTC), one of the nation's premier venues for undergraduate-led research in engineering and computation – Selected as Top 10 Graded Paper.

COSMOS – Cluster 5: Computers in Biophysics & Robotics   June – July 2024

University of California, Davis

- Simulated bacterial run-and-tumble motion across a Gaussian chemoattractant gradient using the diffusion equation and Python libraries (NumPy, Matplotlib).
- Applied stochastic modeling and random walk theory to describe molecular behavior in biological systems.
- Constructed and programmed autonomous Lego MindStorm™ robots using C and EV3 sensors for final project
- Presented final projects in an Ignite-style presentation to university faculty and researchers.

Beaver Works Online Certificate – Python Core, Medyletics, Version Control   April 2023

MIT Beaver Works Pre-Program Curriculum

Completed three technical tracks:

- **Python Core**: Intermediate syntax, functions, recursion, data structures, and error handling
- **Medyletics**: AI applications in health data, model building, regression/classification using NumPy and TensorFlow
- **Version Control**: Git/GitHub fundamentals for collaborative, reproducible data science workflows

UCLA Summer Public Speaking & Debate Program   July – August 2022

University of California, Los Angeles

- Refined rhetorical strategies and argument structures in structured debate formats.
- Practiced 2–3 debates weekly, using flow notes and timed rebuttal planning to improve real-time speaking performance.

CASC Summer Leadership Conference August 2023
University of California, Santa Barbara
- Collaborated with student leaders in policy-centered workshops.
- Developed and proposed community initiatives through collaborative discussions.

LEADERSHIP AND COMMUNITY EXPERIENCES

Web Development Club August 2023 – Present
Co-Founder & President | Troy High School
- Led weekly HTML/CSS/JavaScript workshops and facilitated project planning during board meetings.
- Partnered with 3&ME Academy to expand computer science education, contributing over 120 verified volunteer hours.
- Launched the official Troy High School Clubs Directory (troywebdev.com), the first centralized digital hub for student organizations, improving accessibility and streamlining engagement across the entire school community. 100+ Clubs currently registered.
- Selected as one of 8 clubs to represent the tech program at the Troy Tech Fair (3×).

Physics Club August 2025 – Present
Founder & President | Troy High School
- Established the school's Physics Club and expanded STEM outreach through competition and demonstration.
- Led team to 4th place in Southern California PhysicsBowl; served as top scorer on school team.
- Hosted the F=MA exam and internal TroPhy competitions; delivered engaging physics demos to peers.

Coding Club February 2025 – Present
President
- Designed curriculum covering Python fundamentals, data structures, and algorithmic thinking.
- Prepared coding activities and slides, and led biweekly hands-on educational meetings.
- Mentored new members during practice sessions and fostered collaborative peer learning.

Math Club September 2024 – Present
Co-Founder & President | Matematika
- Co-authored a competition-prep textbook covering advanced math problems (AMC/HMMT/MathCon).
- Organized problem-solving workshops and led student teams in national math competitions.
- Promoted creative and logical reasoning through peer-based discussion and challenge sets.

GYM (Global Youth Mission) June 2023 – Present
General Cabinet Member
- Helped plan monthly discussions and service projects addressing global social issues.
- Collaborated with peers to organize volunteer initiatives, educational workshops, and awareness campaigns.
- Contributed to community service efforts focused on underserved populations.

STEM Club August 2022 – Present
General Cabinet Member
- Collaborated with the leadership team to design monthly STEM themes such as robotics, environmental science, and biotechnology.
- Prepared educational presentations and facilitated interactive science demonstrations during meetings.
- Engaged members through hands-on activities to promote interest in STEM fields.

Discovery Cube Team April 2025 – Present
Team Staff Lead | Discovery Cube Orange County
- Supervised and mentored new and group volunteers during large-scale programs like Bubblefest and Winter Lights.
- Coordinated check-in/out, shirt distribution, shift schedules, and break coverage.
- Liaised between volunteers and museum management to maintain high-quality guest experiences.
- Assisted in a translation project to make exhibits more accessible to visitors.

Game Development Club   January 2025 – Present
Outreach Director & Lead Graphic Designer | Troy High School
- Directed school-wide outreach initiatives to grow club membership and foster external partnerships.
- Designed professional-grade digital assets for club events, games, and competitions.
- Collaborated with other executive board members on branding and public engagement strategy.

EXTRACURRICULAR ACTIVITIES

Marching Band / Concert Band   August 2022 – Present
1st Chair Symphonic Band| Troy High School
- Performed as 1st chair instrumentalist in Concert Band, demonstrating musical excellence and leadership.
- Participated in regional parades, field shows, school concerts, and competitive marching band events.
- Contributed to ensemble success through rehearsals, sectional leadership, and solo performances.

School Golf Team   November 2023 – Present
JV Player | Troy High School
- Competed in Spring 2024 and 2025 golf seasons against regional schools.
- Focused on refining swing technique, course strategy, and mental composure under tournament pressure.

Aim Wonder   October 2024 – Present
Volunteer | Global Humanitarian Organization
- Donated and produced inspirational videos for communities affected by the Israeli-Palestinian conflict.
- Advocated for vulnerable populations, including women in Palestine and Romani families, through multimedia outreach.

Taekwondo   Early Childhood – Present
Martial Artist | Private Dojang
- Earned a 3rd Degree Black Belt through years of disciplined training and testing.
- Demonstrated long-term commitment, physical conditioning, and leadership through peer mentoring.

Schoolhouse SAT Tutoring   January 2024 – Present
Volunteer SAT Tutor | College Board x Schoolhouse.world
- Selected based on top-tier SAT Reading performance to lead online tutoring sessions.
- Taught up to 20 students per session, focusing on evidence-based strategies and test pacing.

AWARDS AND DISTINCTIONS

Top 10 Graded Paper Award | IEEE MIT URTC – Top 10 highest-scored research papers, Oct 2025
United States Physics Olympiad (USAPhO) Qualifier | AAPT – Feb 2024
NMSC NHSPC 2nd Place (National) | National High School Physics Competition – Physics, Apr 2025
NMSC NHSPC 2nd Place (California) | National High School Physics Competition – Physics, Apr 2025
PhysicsBowl School Top Scorer & Team 4th Place | AAPT – Physics (Southern California Region), Apr 2025
Peer-Reviewed Publication, Primary Author | IEEE URTC – Research Paper (International), Oct 2025
AIME Qualified (AMC 12 A&B) | Mathematical Association of America – Mathematics, Nov 2024
MathCon Finalist (2X) | MathCon – Mathematics, 2023, 2024
Beaver Works Certificate | MIT Beaver Works – Computer Science & Machine Learning, Apr 2023
Presidential Volunteer Service Award – Gold | Discovery Cube – Community Service, Apr 2023
Concert Band 1st Chair Performer | Troy High School – Music Performance, 2023–2025
Congressional Award (Gold Medal, STEM Star) | The Congressional Award Foundation – National Service, 2026
AP Scholar with Distinction (2X) | College Board – Academics, July 2024 & July 2025
Science Olympiad State 5th Place (Mechatronics) | Science Olympiad – Engineering, Grade 8
OCSEF Outstanding Achievement | Orange County Science & Engineering Fair – Science Research, March 2025
Discovery Cube Recognized Volunteer | Discovery Cube Orange County – Community Service, 2025