



Afrah Nazar

<https://www.afrahnazar.com>

"I want to spend my life bridging the gaps between minds (of humans, AI, and other non-human beings): closing them where I can and translating across what remains."

STANDARDIZED TESTS

AP Exams *May 2026*
Calculus BC 5 Physics 1 5 Chemistry 5
Comp Sci A 4
SAT *pending*

HONORS / AWARDS

AP Scholar with Honor *August 2026*
College Board
Higher Distinction *July 2026*
Top 15% · International Psychology Olympiad
Judge's Award *April 2026*
Team Missfits 6418 · East Bay Regional, FIRST Robotics · Hayward, CA
2nd Place, Software *March 2026*
Transparent language models for clinical trial matching · Hitachi Science & Engineering Fair · Fremont, CA
4th Place, Biotechnology *March 2025*
A model of neuroplasticity in fruitfly connectome · Alameda County Science & Engineering Fair
4th Place, Software *March 2024*
Generative AI for ADHD screening · Alameda County Science & Engineering Fair
Honors Academic Track *since 2023*
Highest math and science track · Mission San Jose High School · Fremont, CA

SKILLS

Master
Python: data processing, statistical analysis, visualization, machine learning, large language model evaluation

Expert
Onshape · Fusion 360: CAD models for FIRST Robotics competition robots

Proficient
Java · C++ · PyTorch · Brian2 · NetworkX · TransformerLens · LaTeX · RunPod: linear probes, mechanistic interpretability, transformer architectures, lamb brain dissection and anatomical identification

SPORTS

Marathon in training, *(tgt) November 2026*
UW Medicine Seattle
Marathon
Self-directed training program
Half-marathon finisher, Summer *July 2025*
Breeze
Completion medal · self-directed
Track & Field, *February 2024 – May 2025*
Mission San Jose
High School,
Fremont, CA
Mission Valley Athletic League (MVAL)
Championships qualifier in the 200m and 800m · raced 6x 800m, 5x 200m, 2x 400m at district meets and invitationals · mvalsports.org

EDUCATION

Mission San Jose High School, Fremont, CA · GPA 3.89 unweighted *Class of 2027*
Am Govt · AP Bio · AP Eng Lit · AP Physics C · Discrete Math · Econ · Intro to C++ · Lin Alg · Multivar Calc
AP Chemistry (A-/A-) · AP CS A (A-/A) · AP Physics 1 (A/A) · Calc 101A/B (B-/B-) · Eng 11 (A/A) · US History (B/B)
Alg2/Precalc (A+/A) · Chem/Earth Sys H (A/A) · Dig Photo (A/A-) · Eng 10 H (A-/A) · PE (A/A) · World Hist (A/A)
Arabic 3 (A-/A) · Civics (-/A) · Design (A/A) · Eng 9 H (A-/A-) · Geo/Alg2-Trig (A-/A-) · Health (A-/A) · Living Earth (A+/A+) · PE (A/A) 9th

Ohlone College (Dual Enrollment), Fremont, CA *since 2025*
CS 102 C++ (3 units) · MATH 101C Multivar Calc (5 units) · MATH 103 Lin Alg (3 units) · MATH 163 Discrete (3 units) 12th
MATH 101A Calculus I (B-, 5 units) · MATH 101B Calculus II (B-, 5 units) 11th

HarvardX, edX.org *since Summer 2026*
MicroBachelors in Introduction to Neuroscience
MCB80.1x Fundamentals of Neuroscience, Part 1: The Electrical Properties of the Neuron (Certificate)
MCB80.2x Fundamentals of Neuroscience, Part 2: Neurons and Networks (in progress)

Stanford University, Stanford, CA *Summer 2026*
BIO 128S Bioethics (A+, 3 units) · SYMSYS 1 Minds & Machines (A+, 4 units)

UC Scout, ucscout.org *Summer 2025*
AP Psychology (A)

SUMMER PROGRAM

Academic Talent Development Program, UC Berkeley, Berkeley, CA *Summer 2024*
SD4581.1 Cognitive Neuroscience (A+) · SD4530.1 Introduction to Computer Science (A+)

INTERNSHIPS

Neural Care (neuralcare.io), AI-powered dementia support, Remote *since July 2026*
Machine Learning Intern, 5 hrs/wk

- Map caregiving workflows for AI implementation: 5 meetings with subject-matter experts, 3 rounds of evaluation plans, and leadership approval; implementing on open-source models.

Cognitive Neuroscience, Academic Talent Development Program, UC Berkeley *June – July 2025*
Teaching Assistant Intern, 7 hrs/wk

- Built and taught seven 30-minute lessons in Canva from *The Student's Guide to Cognitive Neuroscience* (Ward) to 30+ 9th–12th graders: visual cortex, split-brain phenomenon, neuroplasticity, phantom limb syndrome, dreams and the sleeping brain, the gut-brain connection, and consciousness.
- Led two-hour lamb-brain dissections on major brain structures; guided students through assignments and projects, graded weekly writing, and held 15–30 min biweekly office hours.

STEM ACTIVITIES

SELF-INITIATED STEM PURSUITS, 4 hrs/wk *since 2021*

- Literature & community** — *Nature*, the *Journal of General Internal Medicine* and *Archives of Neurology*; Anthropic's Transformer Circuits thread and the GPT-2 circuit paper; peers on Discord.
- Independent research** — design, modify and execute studies end to end; won teacher-sponsored Pitt Corpus access from DementiaBank via a 10-page proposal, plus the FlyWire connectome.
- Mentorship** — cold-messaged 8+ researchers nationwide; two said yes: Abdullah Khan, Department of Computer Science, Purdue University (since March 2026), on reading and authoring papers, 30+ triaged; Peter Zhu, Department of Psychology, Stanford University (since September 2026).
- Tools** — self-learned on YouTube (Mechanistic Interpretability channel, the GPT-2 circuit paper walkthrough, circuits discussions): 40+ hrs TransformerLens and model internals, 20+ hrs Brian 2, 3+ hrs LaTeX.
- Compute** — 80+ hrs of GPU rented on RunPod to self-host Llama and Qwen.

REPORT / SCIENCE FAIR PROJECTS, 8 hrs/wk

From Criterion to Verdict: How a Language Model Decides Eligibility for Clinical Trials *since January 2026*

Individual report, for submission to the Regeneron Science Talent Search, 2027

- Showed that a small open-source model, read from the inside, can both verify trial-eligibility decisions (89.9%) and explain them — through a six-head circuit that reads the rule, retrieves the patient's facts, cross-checks, and decides.

Dementia Classifier using Transformers' Latent Representations *October 2025*

Co-authored with a school project partner; Abstract No. 1368, submitted to the 2026 Annual Meeting of the American Academy of Neurology

- Reading open-source Llama 3.1-8B's internals detected dementia in 231 Cookie Theft picture descriptions (Pitt Corpus, DementiaBank) far better than prompting it: 0.88 vs 0.55 F1 (0.87 vs 0.61 accuracy).

HOBBIES / FOREIGN LANGUAGES

Commercial Photography 1 & 2, 2025
YouScience certifications
Adobe Photoshop / Lightroom · portfolio of professional assignments

Acoustic guitar, self-taught since 2019
Fingerpick, strum, chord changes · youtube.com/@AfrahNazar-z8p

Foreign languages 2021 – 2024
Hindi · Arabic (Bay Area Arabic Academy)

Blackbox to Glassbox: Interpretable Clinical Trial Matching March 2026
2nd Place (Software), Hitachi Science & Engineering Fair

- An AI can screen a patient for a clinical trial in seconds, but no one can check its answer — and an unexplained verdict is not usable in medicine.
- Read the model’s internal workings instead of what it says: 89.9% accurate, and six of its 1,152 attention heads carry the verdict — one reads the rule, three fetch the patient’s medications, one cross-checks, one decides.

Intelligence Mapping via Neuroplasticity in the Fruitfly Connectome March 2025
4th Place (Biotechnology), ACSEF

- A human brain has 86 billion neurons and a language model 500 billion — far too many to trace. A fruit fly has 186,000, and its wiring has been mapped in full.
- Rebuilt the fly’s smell circuit as 120 simulated neurons and trained it with reward and punishment: the same connections learned to attract, then repel, then attract again — but never told a strong smell from a weak one.

CLUB / COMMUNITY ACTIVITIES

NeuroBridge, Fremont, CA since May 2024
Co-Founder (May 2024); Activities Coordinator since June 2025

- Co-founded a 16-student organization for neurodivergent students with Friends of Children with Special Needs, Neuroguidance and the county library; 100+ served in person, 250+ online.
- Designed and led 20+ two-hour workshops (Astronomy, Engineering, Health & Anatomy) at 2 hrs/wk and 4 half-day holiday family events at 8 hrs/event; ran a 5-tutor library program.

TEDx Club, Mission San Jose High School since 2023
President since 2026; Board Officer '25-'26

- Recruited the 7-officer board and run an 80+ member club at 2–4 hrs/wk — planning, budget, membership, and licensing approval with TEDx officials.
- Staged a TEDx-licensed event for 80+ with 5 professional speakers and a campus event for 40+ with 3 students; earlier recruited adult speakers and coached student speakers 1 hr/wk over 9-week cycles.

Neuroscience Club, Mission San Jose High School since 2023
Public Relations Officer since 2026

- Publish educational content for 300+ followers at 1 hr/wk and stage the club’s major events at 3 hrs/event — Walk to End Alzheimer’s, Brain Awareness Week, Jello Brain Dissection, Brain Bee prep.
- Partner with MSJ Psychology, MedCorps and Neuroguidance on joint outreach at 2 hrs/event; 45-minute seminars draw 20–30 each.

4theMind, mental-health nonprofit since July 2024
Head Information Researcher

- Direct a 3-researcher team setting weekly psychology and mental-health topics for 400+ followers, 1–2 hrs/wk; produced 40+ short videos (2,000–8,000 views) and 60+ slideshows.
- Built 10+ children’s slideshows and 10+ parent flyers across 10 monthly fundraisers with a 7-person team, 3 hrs/fundraiser — \$300 raised.

The Missfits, Team 6418 FIRST Robotics (all-female, 50+ members), San Francisco, CA since January 2025
PR/Media Lead since 2026

- Head a 30-member PR/media team: newsletters at 2 hrs each, Instagram at 2 hrs/post, sponsor-logo banners, shirts and pins at 10 hrs/season, plus photography and the team website.
- Demonstrated the robot at Proof School, 2 farmers markets, 2 night markets and the Open Sauce festival; earlier designed its feeder in Onshape and coded LED subsystems in Java, 7 hrs/wk.