Yashvir Sabharwal

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Education

2025–2029 **Harvard University**, A.B. Candidate in Neuroscience; concurrent S.M. in Computer Science; secondary in Mind, Brain, and Behavior (expected May 2029).

Coursework: Neurobiology; Neural Mechanisms; Neurophysiology & Neural Interfaces; NeuroAI; Biology; Chemistry; Genetics; Biophysics; AI in Molecular Biology; Statistics; Mathematics and Physics Seminar (String Theory); Economics.

Activities: Harvard OpenBio Lab (Director of Engagement); AI Safety Student Team (Technical AI Safety Fellow); HUSAI (Technical Fellow); Harvard Undergraduate Kabaddi Club (Director); Harvard Sikh Center (Director); Harvard/MIT Flying Clubs; Harvard Bhangra.

Research Positions

2026–present **BrainGate**, Massachusetts General Hospital & Brown University. Undergraduate Researcher, intracortical brain-computer interfaces.

Self-supervised neural foundation models on the BrainGate2 trial's 20-year archive (2,319 sessions, 20 Utah arrays, 96 electrodes at 30 kHz in motor cortex) from participants with ALS, stroke, or spinal cord injury; masked modeling to cut per-session decoder calibration; recursive self-improvement loops that retrain decoders on labels inferred from their own closed-loop use.

2026–present **Mahmood Lab**, Harvard Medical School & Massachusetts General Hospital. Undergraduate Researcher, AI for medicine.

Advisors: Andrew Zhang, Faisal Mahmood.

Clinical reasoning models on Apollo, a foundation model trained on 25B records from 7.2M patients across 28 modalities; CS1Pro, a multimodal System One model (after TypeSafe AI's Jev) that returns typed clinical decisions with calibrated probabilities; structuring eligibility criteria from 500K+ ClinicalTrials.gov studies for patient-trial matching.

2026 **National Institutes of Health**, NINDS. Computational Biophysics Fellow, Computational Structural Biology Section.

Advisors: Giacomo Fiorin, Antoniya A. Aleksandrova, Lucy R. Forrest.

ML surrogate for lipid-bilayer deformation, $\sim 10^4\times$ faster than molecular dynamics; membrane-protein placement pipeline applied to experimental and AlphaFold structures.

2024–2025 **Alljoined**. AI Researcher.

Co-developed Alljoined1, a 64-channel EEG-to-image dataset (46,080 epochs, 10,000 natural images); built timing, alignment, and quality-control pipelines for generative EEG decoding.

2023–2024 **Stability AI** & MedARC. AI Researcher, neuroimaging and generative modeling.

Spatiotemporal masked autoencoders for cortical flat-map fMRI pretrained on 2.1K hours of data; first systematic fMRI scaling-law analysis; contributor to MindEye.

Honors and Awards

2026 Best Poster Award, NIH Summer Poster Day.

2025 Virginia Junior Science and Humanities Symposium 1st Place; National JSHS Grand Finalist.

2024 Congressional Award Gold Medal.

2024 National STEM Champion, National STEM Challenge (U.S. Department of Education).

2024 USA Biology Olympiad, Semifinalist and Honorable Mention (top 50 Open score).

2024 U.S. Air Force JROTC Flight Academy Scholarship ($35,000).

2024 American Cancer Society Cancer Research Award.

2024 Virginia Junior Academy of Science, 1st Place.

2023 Z Fellow.

2023–2025 Regeneron ISEF Winner (3×).

2021–2025 Global AFJROTC Cadet of the Year (2 of 85,000). CyberPatriot, #1 in Virginia (2×). VFW Officer of the Year; VFW Top Cadet in Virginia; VASSAR Top Cadet in Virginia. Distinguished Graduate and #1 in class, CAP Specialized Undergraduate Pilot Training Familiarization Course.

Publications and Preprints

[1] **Y. Sabharwal**, G. Fiorin, A. A. Aleksandrova, L. R. Forrest. Lipid environment preferences encoded in membrane protein structure. *Under review*, 2026.

[2] Scaling vision transformers for functional MRI with flat maps. *arXiv:2510.13768*, 2025. (Contributor.)

[3] **Y. Sabharwal**, B. Rama. Comprehensive review of EEG-to-output research: decoding neural signals into images, videos, and audio. *IntelliSys*, 2025. arXiv:2412.19999.

[4] J. Xu, B. Aristimunha, M. E. Feucht, . . . , **Y. Sabharwal**, . . . , A. Nestor. Alljoined1: a dataset for EEG-to-image decoding. *CVPR DCAMI Workshop*, 2024. arXiv:2404.05553.

[5] Reconstructing the mind's eye: fMRI-to-image with contrastive learning and diffusion priors. *NeurIPS*, 2023 (Spotlight). (Contributor.)

[6] **Y. Sabharwal**. NephroNet: identifying renal cell carcinoma and generating synthetic training images with CNNs and diffusion models. *arXiv:2302.05830*, 2023.

Talks and Posters

2026 NIH Summer Poster Day, Bethesda (poster; Best Poster Award).

2026 *BrainSync*. AAAI Undergraduate Consortium (poster).

2025 *The Future of Drones*. Royal Aeronautical Society (talk).

2024 Alljoined1. CVPR DCAMI Workshop (poster).

2023 MindEye. NeurIPS Spotlight (contributor).

Venture

2026–present **Anti Fund**, Miami. Investor.
Venture and growth firm backing technical founders in AI, defense, robotics, and energy; $180M+ AUM across Venture I and Growth I, raising a $400M Fund II.

Service and Leadership

2023–present Co-founder and Executive Coordinator, **International Research Olympiad**. Research competition reaching 20,000+ students in 90 countries; lead an 80-person team.

2019–2025 Cadet Commander and Cadet Lieutenant Colonel (top 1%), **Civil Air Patrol**; AFJROTC Cadet Corps Commander. International Air Cadet Exchange to the United Kingdom. FAA Private Pilot Certificate (2024).