Yash Shah

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EDUCATION

Stanford University, *PhD Computer Science* — **Stanford, CA**
Research: Biophysically-plausible models of the human vision system — Sep 2025 - Present

Stanford University, *M.S. Computer Science (spec. Artificial Intelligence)* — **Stanford, CA**
GPA: 4.109 out of 4.3 — Sep 2023 - Jun 2025

University of California, San Diego, *B.S. Computer Science, minor Humanities* — **La Jolla, CA**
Summa Cum Laude, GPA: 3.977 out of 4.0 — Sep 2019 - Jun 2023

PUBLICATIONS

* = Equal contribution

Cottrell, G. W., **Shah, Y.**, Zhi, X., Long, K. (2025). Modeling Divisive Normalization in Visual Cortex [Poster presentation]. *Society for Neuroscience (SfN)*.

Shah, Y., Yamins, D. L. K. (2025). Topographic Vision Transformers [Poster presentation]. *The 8th Annual Conference on Cognitive Computational Neuroscience (CCN)*.

Shah, Y., Gonzalez, C., Abbasi, M., Zhao, Q., Pohl, K., Adeli, E. (2025). Confounder-Free Continual Learning via Recursive Feature Normalization. *In International Conference on Machine Learning (ICML)*.

Shah, Y., Tran, K., Yamins, D. L. K. (2024). Modeling Localized Synaptic Degeneration and Neural Plasticity in Visual Cortex [Poster presentation]. *The 7th Annual Conference on Cognitive Computational Neuroscience (CCN)*.

Yarmand, M., Chen, C., Sherer, M. V., **Shah, Y. N.**, Liu, P., Wang, B., Hernandez, L., Murphy, J. D., Weibel, N. (2024). Enhancing Accuracy, Time Spent, and Ubiquity in Critical Healthcare Delineation via Cross-Device Contouring. *Proceedings of the 2024 ACM Designing Interactive Systems Conference (DIS), 905–919*. doi:10.1145/3643834.3660718.

Cottrell, G. W., Gahl, M., Kulkarni, S., Venkatramani, S., **Shah, Y.**, Long, K., Zhi, X., Agarwal, S., Li, C., He, J., Fischer, T. (2023). The Model 2.0 and Friends: An Interim Report [Poster presentation]. *Computational and Mathematical Models in Vision (MODVIS)*.

RESEARCH EXPERIENCE

Graduate Researcher in Rotation | Vision and Perception Neuroscience Lab (*PI: Dr. Kalanit Grill-Spector*) — **Sep 2025 – Present**

Computer Vision, Computational Neuroscience

- Understanding the requirement of a log polar transform between the retina and the primary visual cortex (V1), and its role in visual retinotopy (maps of eccentricity and phase) using deep artificial neural networks (DANNs).

Graduate Researcher | Stanford NeuroAI Lab (*PI: Dr. Daniel Yamins*) — **Mar 2024 – Present**

Computer Vision, Computational Neuroscience

- Understanding the roles of architectural inductive biases and sparse long-range lateral connections in the primate visual system as they relate to minimization of wiring length and achievement of high task performance.
- Recapitulating spatial topography of the entire visual system at multiple scales using a dynamic video-based model of the visual cortex.
- Conceptualized modeling focal synaptic degeneration in different visual areas of the ventral visual cortex to generate hypotheses around the impact of degeneration on object categorization performance in the presence and absence of recurrent connections and teaching signals.

Graduate Researcher | Stanford Translational AI Lab (*PI: Dr. Ehsan Adeli*) — **Jan 2024 – Jun 2025**

Confounder-Free Representation Learning, Continual Learning, Fairness

- Conceptualized *Recursive Metadata Normalization*, a flexible layer that can be inserted in deep neural networks to

remove the influence of confounding variables from learned feature representations during continual learning.
- Pre-processed and worked with T1w MRIs, including voxel-level augmentation, visualizing saliency maps, and identifying regions of interest using the Harvard Whole Brain Atlas.
- Carried out investigations around running experiments and analyzing results.
- Lead author of the manuscript published at the International Conference on Machine Learning (ICML), 2025.

Undergraduate Researcher | GURU Lab (*PI: Dr. Garrison Cottrell*) **Mar 2022 – Jun 2023**

Computer Vision, Computational Neuroscience, Divisive Normalization

- Implemented a sparsely activated neural network architecture by performing divisive normalization.
- Led project efforts by mentoring and working with two undergraduates—setting group meetings and assigning tasks.
- Analyzed the biological underpinnings of the emergence of local competition between orientation-selective and color-opponent cell types in the model.

Deep Learning Instructional Assistant | UC San Diego **Sep - Dec '22, Mar - Jun '23**

Communication, Teaching

- Held office hours for students to offer group and individual help.
- Designed programming assignments and exam questions, and efficiently graded them.
- Feedback: "very knowledgeable and enthusiastic to share this knowledge", "genuinely car[ing] about students".

Undergraduate Researcher | Weibel Lab (*PI: Dr. Nadir Weibel*) **Sep 2021 – Jun 2022**

MRIs, Cross-Platform Software, Contouring Training

- Developed a cross-device contouring prototype that enables physicians to examine and delineate structural MRIs as part of radiation oncology training.
- Enabled zooming and translation capabilities for medical images through coordinate shifting and introduced cross-device functionality for multiple desktop and hand-held devices.
- Applied predictive artificial neural networks to calculate toxicity scores for user-delineated contours as part of providing ad-hoc feedback.

TALKS

- Invited Talk at the Kanwisher lab, "Modeling Focal Synaptic Degeneration and Neural Plasticity in Ventral Visual Cortex," MIT, Nov 2024.
- Invited Nanosymposium Speaker, "Modeling Focal Synaptic Degeneration and Neural Plasticity in Ventral Visual Cortex," Society for Neuroscience, Chicago, United States, Oct 2024.
- Undergraduate Graduation Speaker, Computer Science and Engineering Department, UC San Diego, Jun 2023.

SERVICE

- Reviewer, The 14th International Conference on Learning Representations (ICLR), 2025.
- Reviewer, The 8th Annual Conference on Cognitive Computational Neuroscience (CCN), 2025.
- Reviewer, The 13th International Conference on Learning Representations (ICLR), 2024.
- Reviewer, The 7th Annual Conference on Cognitive Computational Neuroscience (CCN), 2024.

FELLOWSHIPS

- Stanford School of Engineering First-Year Fellowship, 2025-2026.

WORK EXPERIENCE

Software Engineer | PayPal **Jul 2023 – Sep 2023**

Ruby on Rails, PostgreSQL

- Queried ∼8M cards for various merchants using PostgreSQL and submitted for bulk network token enrollment.
- Analyzed 3-D secure transactions for 118 merchants and (1) enabled them to be processed through network tokenization first in production, (2) modified the way 3-D secure transactions are processed for certain processors and card types in the codebase so that future transactions can be directly processed through NT First.
- Revamped the transaction processing pipeline for cleaning up around 10 feature toggles after confirming that they are working effectively.

Software Engineer Intern | PayPal **Jun 2022 – Sep 2022**

Ruby on Rails, PostgreSQL, Datadog monitoring, Production changes

- Enabled network tokenization first for payment transaction processing for PayPal's merchant partners to improve security and optimize authorization rates by around 40% for some merchants.
- Utilized data monitoring tools for monitoring code changes.
- Added a Foreign Tax ID Prompt to the Token Requestor ID (TRID) Onboarding UI to enable foreign merchants to apply for network tokenization.

Technology Development Intern | Optum Technology **Jun 2021 – Aug 2021**

React.js, TypeScript, Material-UI, Agile Methodology

- Developed a client portal using React and TypeScript and made Axios calls to the server using React Redux to onboard clients and allow them to place requests for Optum's API services.
- Performed interface and architecture design research before building the portal for seamless user experience.
- Influenced company executives by presenting the business benefits of my project at company Shark Tank presentations.

HONORS AND AWARDS

- *Exceptional Graduate Student Award*, Dean's Graduate Student Advisory Council (DGSAC), Stanford, May 2025.
- *Community Impact Award*, Stanford Alumni Association, Apr 2025.
- *Computer Science and Engineering Department Excellence Award* (press), Jacobs School of Engineering Ring Ceremony, UC San Diego, Jun 2023.
- *Christine Norris Award* (website), Revelle College, UC San Diego, May 2023.
- *Member*, Phi Beta Kappa, California Sigma chapter since Apr 2023.
- *Member*, Tau Beta Pi, California Psi chapter since Jan 2022.
- *Revelle College Provost's Honors Certificate*, Revelle College, UC San Diego, Sep 2020, Oct 2021.
- *Exceptional Diligence Award*, Revelle Hall Association, UC San Diego, Dec 2019.
- *Outstanding Leadership Award*, Revelle Hall Association, UC San Diego, Dec 2019.

SCHOLARSHIPS

- *CSE Alumni Advisory Board Leadership of Excellence Scholarship* (blog), 2022 – 2023.
- *Aya Healthcare Scholarship*, 2022 – 2023.
- *Brutten Family Alumni Leadership Scholarship*, 2021 – 2022, 2022 – 2023.
- *Bevan Schroeder Memorial Scholarship*, 2021 – 2022.

VOLUNTEERING AND LEADERSHIP

- *Member*, Wu Tsai Neurosciences Institute's Community Engagement, Inclusion, and Belonging (CEIB) Committee, Oct 2025 to Present.
- *MICE Area Steward*, Stanford Graduate Workers Union (SGWU), Oct 2025 to Present.
- *Mentor of 1 lovely college student*, Stanford Engineering Research Introductions Organization (SERIO), May 2025 to Present.
- *Co-President*, Out in Science, Technology, Engineering, and Math (oSTEM), Stanford, Jun 2025 to Present.
- *Mentor of 2 PhD applicants*, Stanford Student Applicant Support Program (SASP), Nov 2025.
- *Co-President*, Engineering Students for DEI, Stanford, Jun 2024 to Jun 2025.
- *Queer Perspective Speaker Series (QPSS) coordinator*, Out in Science, Technology, Engineering, and Math (oSTEM), Stanford, Jun 2024 to Jun 2025.
- *New Graduate Student Orientation (NGSO) Coordinator*, Stanford, July to Sep 2024.
- *Pen-pal of 3 lovely middle schoolers*, Stanford Science Penpals, Oct 2023 to Jun 2024.
- *Secretary*, Tau Beta Pi, San Francisco Bay Area Alumni Chapter, Aug 2023 to Aug 2024.
- *Instructional Assistant and Course Designer*, CS21SI: AI for Social Good, Stanford, Mar to Jun 2024.
- *Humanities Peer Tutor*, UC San Diego, Jan 2023 to Jun 2023.
- *Recording and Corresponding Secretary*, Tau Beta Pi, California Psi chapter, Jun 2022 to Jun 2023.
- *Students Who Engage, Learn, and Lead (SWELL) Guide*, UC San Diego, Dec 2020 to Mar 2021, Sep 2021 to Jun 2022.
- *Point Person for "Pick-A-Pal" Event*, Revelle Hall Association, UC San Diego, Sep to Dec 2019.