

vansh tibrewal

vanshtibrewal@gmail.com | (626) 786-9418

EDUCATION

California Institute of Technology (Caltech)

B.S. Computer Science

Expected 2026

GPA: 4.3 / 4.0

LINKS

GitHub:// [vanshtibrewal](#)

Personal:// [vanshtibrewal.github.io](#)

LinkedIn:// [in/vanshtibrewal](#)

COURSES

Advanced Topics in ML:

- LLMs for Reasoning
- Large Language and Vision Models

Learning Systems

GPU Programming

Linear Algebra

Probability and Statistics

Networks

Software Engineering

Head Teaching Assistant for

Computing Systems, Data Structures

Teaching Assistant for Software

Design, Computer Programming

SKILLS

Python, C, Java, JavaScript, C++, R

PyTorch, TensorFlow, Keras, CUDA

OCaml, Haskell, Git, Makefile

HTML, CSS, React.js, Numpy

AWARDS

Winner of MIT COVID-19 Challenge:

Beat the Pandemic II, a global hackathon with 1800+ hackers

National Rank 4 + AIME qualifier in American Mathematics Competition

\$5000 Award at MIT AWS Buildathon

EXPERIENCES

Citadel GQS, Incoming QR Engineering Intern

June 2025

Caltech (Perona) Vision Lab, Researcher

Jan 2024 – Present

- Developing novel segmentation-based methods for improved self-supervised training of vision foundation models for action recognition.
- Applying methods to unsupervised identification of behavior motifs linked to neurosurgical outcomes in sheep.

Caltech (Anima) AI + Science Lab, Researcher

Nov 2022 – Present

- Training foundation models for computational fluid dynamics by pre-training on complex geometries in graphics data.
- Designing a better propeller for drones by solving the inverse problem using a multi-scale, graph-based Fourier Neural Operator architecture.
- Applied 3-dimensional Vectorized Fourier Neural Operator to model MHD equations governing plasma evolution in Tokamak nuclear fusion reactors.

Harvard University, Research Assistant

July 2020 – July 2022

- Co-authored [research paper](#) published in Taylor & Francis Journal.
- Implemented Holt-Winters algorithm, ARIMA models
- Replicated and extended augmented SEIR model, presented to NSF.
- Implemented ecological regression model.

Coronavirus Visualization Team, ML Engineer

June 2020 – May 2021

- Used data augmentation and transfer learning to diagnose COVID-19 from CT scans with a 97.13% precision.
- Implemented Naive Bayes Classifier to conduct sentiment analysis of Twitter data to track public sentiment during the lockdown.

Angel Xpress Foundation, Programmer

May 2021 – June 2021

- Built, trained and deployed chatbot to answer the queries of visitors for a website which receives 5000+ monthly visitors.
- Led to 80% decrease in email queries with no change in number of customers (donors, volunteers) for non-profit.

PROJECTS

Activation Steering for Model Interpretability - Team of 4

Extended Contrastive Activation Addition (CAA) to Llama-3-8b. Applied CAA to improve LLM reasoning capabilities. Tested different intervention points for CAA (post-multi-head-attention vs. residual stream). Report: [bit.ly/CAA159](#).

Accelerating GPT-2 Inference in CUDA - Team of 4

Achieved an 80x speedup in GPT-2 inference. Wrote custom, optimized CUDA kernels for numerous operations (matrix multiplication, element-wise GELU, etc) to inference GPT-2 in C and CUDA. Repo: [github.com/nika-chuzhoy/cuda-gpt-2](#).

"Slime" Web-Based Video Game - Team of 4

Wrote physics engine, image rendering framework, animation framework, mouse and keyboard handler, dynamic scrolling environment with parallax. Led team of 4. HTML, CSS and JavaScript. Demo: [vanshtibrewal.github.io/cs3.html](#).