Kushal Dudipala

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Education

2022 to May 2026 *(Expected)*

Georgia Institute of Technology
Double Major
B.S. in Computer Science (Threads Intelligence & Theory) — GPA (Major): 3.87/4.0
B.S. in Biology — GPA (Major): 3.68/4.0

Publications

Kushal Dudipala, Mayukh Deb and N. Apurva Ratan Murty (2025). "Neuromap". In: *Preparation for a top-tier Vision Conference.*

Mayukh Deb, **Kushal Dudipala** and N. Apurva Ratan Murty (2025). "Retinotopy all the way Down". In: *Preparation for a top-tier Vision Conference.*

Roulin Wang, Mayukh Deb, **Kushal Dudipala**, N. Apurva Ratan Murty, et al. (2025). "ANN Models of Category-Selective Brain Regions Largely Predict and Recapitulate Key Experimental Findings in a Zero-Shot Manner". In: *Submitted a top-tier neuroscience journal.*

Ruolin Wang, Mayukh Deb, **Kushal Dudipala**, N. Apurva Ratan Murty, et al. (2025). "Cortex-Canvas: An Interactive Web Interface for Executing and Evaluating Models of the Human Visual Cortex". In: *Under Review, Conference on Human Factors in Computing Systems 2026.*

Tim Stamm, **Kushal Dudipala**, Farzenah Najafi, et al. (2024). "Investigating Predictive Processing in Cortico-Cerebellar Circuits". In: *Neuronext Launch Symposium.* Poster presentation.

Awards

Georgia Tech Dean & Faculty Honors List — 2022 – 2025
Fast-Track to Research Scholarship ($1500) — 2024
Zelle Miller Scholorship ($50,000) — 2022 – 2025

Research Experience

Research Assistant @ Georgia Tech — August 2024 - Present

At Georgia Tech's Murty Lab, worked with Ruolin Wang (Cortex) and Mayukh Deb (Retinotopy) on neural modeling; now independently leading Neuromap.

- Co-led the efforts to replicate neuroscience studies in silico on brain-optimized models.
- Collaborated with Dr. Hans Op de Beeck's Lab on analysis of topographic models.
- Worked with large-scale hyperparam sweeping and training pipelines across hundreds of different architectures
- Assisted in the deployment of cortex.murtylab.com, now analyzed 73,000 stimuli
- Developed several in-house libraries, such as monkey single-neuron dataloader + readout trainer, localizer library, FFCV-SimCLR implementations, and video trainers.

Undergraduate Researcher @ *Georgia Tech* — May 2024 - August 2024

At Georgia Tech's Najafi Lab, worked as a lab technician and researcher, creating experimental protocols and training pose-estimation deep neural networks.

- Trained and deployed DeepLabCut, a pose-estimation deep neural network, achieving 98.8% validation accuracy in tracking pupil movements across 20 trials.
- Built a high-throughput video processing pipeline on HPC clusters to ingest 60 fps 1080p data, run model inference, and automate result archiving using C++, Bash, and MATLAB.
- Tuned and worked with MATLAB experimental protocols, helping experimenters and PI.

Industry Experience

Software Engineering Intern II @ *Elevance Health* May 2024 - August 2024

Independently designed and deployed an in-house data management tool, ReconcileDB, an in-house data management tool for querying and detecting inconsistencies across HIPAA-protected databases.

- Built ReconcileDB using Python, MongoDB, ReactJS, and REST APIs in full-stack deployment.
- Led the development of ReconcileDB from concept to production, managing all hosting and database design.
- Final implementation reduced database migration effort by 500 work-hours per hour, becoming a key tool in the migration pipeline.

Teaching Experience

Mathematics Tutor August 2024 - May 2025

- Tutored students in Computer Science (CS1332: Data Structures) and Math (MATH 1501, 1502, 2551: Calculus I, II, III)
- Assisted peers with preparation for exams and homework, deepening conceptual understanding.

Projects

Sysmon GitHub

macOS system daemon for native system monitoring using a Rust framework.

FFCV-SimCLR Trainer *Not Public*

High-performance self-supervised SimCLR learning pipeline using FFCV dataloaders and NT-Xent loss.

Centralized Localizer Experiment Library *Not Public*

Unified codebase for running major neuroscience localizer experiments, enabling quick analysis of fMRI-based visual category studies on ANNs.

Crypto-Anomaly Tracker Paper

LSTM-based time-series model detecting anomalies in cryptocurrency price data.

Ames Housing Dataset (Kaggle) Website

Built advanced regression models to predict house prices using feature engineering and ensemble methods.

Pixel-Run (GBA Game) GitHub

Developed a finate-state-machine GBA mini-game in C, using Docker for deployment in emulator

Skills

Languages: *Python, CUDA*
Frameworks: *PyTorch, NumPY, einops, Pandas*
Interests: *Chess, cooking, running, and international travel (Georgia Tech BEST-Lyon 2023)*