

# Kushal Dudipala

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## EDUCATION

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2022 to May 2026 <i>(Expected)</i>	<b>Georgia Institute of Technology</b> <u>Double Major</u> B.S. in Computer Science (Threads Intelligence & Theory) B.S. in Biology	GPA (Major): 3.87/4.0 GPA (Major): 3.68/4.0
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## PUBLICATIONS

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**Kushal Dudipala**, Mayukh Deb and N. Apurva Ratan Murty (2025). “Neuromap: Bridging Neural Activity and Perceptual Behavior Through Joint Optimization”. In: *Final stages of preparation*.

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: *Final stages of preparation for a top-tier neuroscience journal*.

Mayukh Deb, **Kushal Dudipala** and N. Apurva Ratan Murty (2025). “Retinotopy all the way Down”. In: *Preparation*.

## POSTERS

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**Kushal Dudipala** Mayukh Deb, Benjamin Lahner & N. Apurva Ratan Murty (2024a). “Neuromap: Bridging Neural Activity and Perceptual Behavior Through Joint Optimization”. In: *Biology Capstone Symposium*. Poster presentation.

– (2024b). “Neuromap: Bridging Neural Activity and Perceptual Behavior Through Joint Optimization”. In: *Neuroscience Undergraduate Symposium*. Poster presentation.

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

## AWARDS

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

## RESEARCH EXPERIENCE

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**Research Assistant @ Georgia Tech** August 2024 - Present

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

- **Leading** NeuroMap project, which jointly optimizes for task and neural alignment.
- 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](http://cortex.murtylab.com), has 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** August 2023 - May 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, worked on aligning auditory and visual stimuli.

## INDUSTRY EXPERIENCE

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### 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, becoming a key tool in the migration pipeline.

## TEACHING EXPERIENCE

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### 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

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### 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 finite-state-machine GBA mini-game in C, using Docker for deployment in an emulator

## SKILLS

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Languages: *Python, CUDA*

Frameworks: *PyTorch, NumPY, einops, Pandas*

Interests: *Chess, cooking, running, and international travel (Georgia Tech BEST-Lyon 2023)*