Aditi Chandrashekar

AI for Science

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EDUCATION

NYU, Courant Institute of Mathematical Sciences — New York, NY
PhD, Computer Science — 2025 – Present
Advised by Kyunghyun Cho, Eero Simoncelli, and Rob Fergus

California Institute of Technology — Pasadena, CA
B.S., Computer Science, Information + Data Science (Minor) — 2021 – 2025
GPA: 4.1/4
Thesis: "Generalizable and Robust Equivariant Diffusion to Solve Inverse Problems"
Advised by Bahareh Tolooshams and Anima Anandkumar

EXPERIENCE

Anima AI + Science Lab (Anandkumar Lab), Caltech — Pasadena, CA
Undergraduate Researcher, *Advised by Dr. Bahareh Tolooshams* — Sept 2023–Sept 2025

- Built diffusion models for recovery of signal from measurement in Functional Ultrasound (fUS) and MRI images
- Created framework for equivariance regularization in diffusion sampling to better solve inverse problems (EquiReg)

Computational Cameras Lab (Bouman Lab), Caltech — Pasadena, California
Undergraduate Researcher, *Advised by Brandon Zhao and Diego Royo* — Sept 2024–Mar 2025

- Reconstructing dark matter maps from poorly sampled astronomical data using multi-modal diffusion models

Allen Institute for Brain Sciences — Seattle, WA
Arthur Rock SURF Fellow, *Advised by Dr. Mariano Gabitto* — June 2024–Oct 2024

- Built lightweight transformer architectures to learn cellular representations of Alzheimer's Disease (AD) states
- Achieved state of the art performance on celltype annotation task (94% accuracy on RNA-Seq data alone)

ARCL Lab (Chung Lab), Caltech — Pasadena, CA
Aerospace Corporation SURF Fellow, *Advised by Dr. Ben Riviere and John Lathrop* — Jan 2023–Aug 2023

- Built an autonomous testbed and controller for development of planning algorithms
- Developed control and planning algorithms for the Indy Autonomous Racing Challenge

AIMS Lab (Lee Lab), Paul G. Allen School, University of Washington — Seattle, WA
William H. and Helen Lang SURF Fellow, *Advised by Dr. Nicasia Beebe-Wang* — July 2022–Sept 2022

- Investigated relationships between gene expression and AD neuropathology using Explainable AI techniques

PUBLICATIONS

EquiReg: Equivariance Regularized Diffusion for Inverse Problems
Bahareh Tolooshams*, **Aditi Chandrashekar***, Rayhan Zirvi*, Abbas Mammadov, Jiachen Yao, Chuwei Wang, and Anima Anandkumar
Building Physically Plausible World Models at ICML 2025, Submitted to ICLR 2026

Using Multi-Modal Diffusion Models to Reconstruct Dark Matter Fields
Aditi Chandrashekar*, Saumya Chauhan*, Eshani Patel*, Maria Vazhaeparambil*
AI to Accelerate Science and Engineering (AI2ASE) at AAAI 2026.

RuleSum: Injecting Rulesets into Knowledge Graphs for Accurate and Accessible Legal Summarization
Aditi Chandrashekar*, Saumya Chauhan*
Naturalistic and Open-World Reasoning Agents (NORA) at NeurIPS 2025

A Unified Model for Compressed Sensing MRI Across Undersampling Patterns
Armeet Singh Jatyani, Jiayun Wang, **Aditi Chandrashekar**, Zihui Wu, Miguel Liu-Schiaffini, Bahareh Tolooshams, Anima Anandkumar
CVPR 2025

VARS-fUSI: Variable Sampling for Efficient Functional Ultrasound Imaging using Neural Operators
Bahareh Tolooshams, Lydia Lin, Thierri Callier, Jiayun Wang, Sanvi Pal, **Aditi Chandrashekar**, Claire Rabut, Zongyi Li, Chase Blagden, Sumner Norman, Kamyar Azizzadenesheli, Charles Liu, Mikhail G. Shapiro, Richard A. Andersen, and Anima Anandkumar
Submitted to Nature Communications

TabVI: Leveraging Lightweight Transformer Architectures to Learn Biologically Meaningful Cellular Representations
Aditi Chandrashekar, Rohan Gala, Andreas Tjärnberg, Saniya Khullar, Grace Huynh, Mariano Gabitto
In preparation.

TALKS & POSTERS

Using Multi-Modal Diffusion Models to Reconstruct Dark Matter Fields
Aditi Chandrashekar*, Saumya Chauhan*, Eshani Patel*, Maria Vazhaeparambil*
Lightning Talk, *MIT URTC 2025*

Learning Biologically Meaningful Cellular Representations using Transformer Architectures
Aditi Chandrashekar, Mariano Gabitto
Poster, *SURF Seminar at Caltech/ Accepted at ISCB-LATAM SoIBio CCBCOL, 2024*

Building an Autonomous Testbed for Motion Planning Algorithms on a modified RC Car
Aditi Chandrashekar, John Lathrop, Ben Rivière, Soon-Jo Chung
Talk, *SURF Seminar at Caltech, 2023*

Feature Selection using XAI to Refine Associations between Prominent Genes and AD Neuropathology
Aditi Chandrashekar, Nicasia Beebe-Wang, Su-In Lee
Talk, *SURF Seminar at Caltech, 2022*

AWARDS

2024 Arthur Rock SURF Fellowship
2023 Aerospace Corporation SURF Fellowship
2022 William H. and Helen Lang SURF Fellowship
2021 George P. Mayhew Scholarship
Regeneron ISEF Finalist

TEACHING

2024-2025 Caltech CS 179 (GPU Programming) Teaching Assistant
2022-2023 Caltech CS 2 (Data Structures) Teaching Assistant
2022-2025 Caltech Peer Academic Coach (Calculus, Linear Algebra, Computer Science)

REFERENCES

Available upon request.