



Rohit Dilip


I develop machine learning methods to solve biological problems.

 rohitdilip

 rdilip

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Selected Courses

Large Language and Vision Models

- Advanced Machine Learning
- Inverse Problems
- Quantum Computation
- Networks
- Optimization
- Immunology
- Applied Probability

Honors & Awards

- Scale AI Hackathon 2nd Place
- Scale AI Hackathon Chroma Prize
- Sigma Xi
- Phi Beta Kappa
- Fullbright Semifinalist
- NSF Honorable Mention
- Princeton Applied Math Best Presentation Award
- Manfred Pyka Prize in Physics
- Kusaka Memorial Prize in Physics
- Allen G. Shenstone Prize in Physics
- US Physics Olympiad Gold Medalist

Teaching

- Contrastive Learning for Proteins (project class)
- Deep Learning in Biology
- Networks and economics
- General chemistry

Education

- 2021-2025 **PhD in Computer Science at Caltech** GPA: 4.00
Graduate research in the Van Valen / Gkioxari Labs
- 2015-2019 **A.B. in Physics at Princeton University** GPA: 3.90
Graduated with high honors and minors in Applied/Computational Mathematics and Policy/Philosophy

Experience

- Sept 2021 - **Graduate researcher** advised by David Van Valen & Georgia Gkioxari
Now
Research focuses on developing vision and language methods to solve problems in bioengineering at scale, with applications from diagnostics to drug discovery.
- Sept 2019 - **Research Scientist** advised by Frank Pollmann
Sept 2020
Research focused on developing quantum machine learning algorithms for computer vision, and on using high dimensional tensor factorization methods for condensed matter physics.
- 2017 - 2019 **Undergraduate Researcher** advised by Jeffrey Thompson
Senior thesis: *Spectroscopy of Rydberg states in Ytterbium-174*.
Discovered first measurements of Yb-174 spectrum.

Publications

- A Foundation Model for Cell Segmentation (Uriah Israel, Markus Marks, **Rohit Dilip**, et al.) *bioArxiv:10.1101/2023.11.17.567630v1*. [co-first author]
- Data Compression for Quantum Machine Learning (**Rohit Dilip**, et al.) *Physical Review Research*.
- Real-and imaginary-time evolution with compressed quantum circuits (SH Lin, **Rohit Dilip**, A Smith, F Pollmann.) *PRX Quantum*.
- Interacting models for twisted bilayer graphene (F Faulstich, K Stubbs, Q Zhu, T Soejima, **Rohit Dilip**, et al.) *Physical Review B*.
- Trapping alkaline earth Rydberg atoms optical tweezer arrays (J Wilson, S Saskin, Y Meng, S Ma, **Rohit Dilip**, et al.) *Physical Review Letters*.

Deployed Projects

CellSAM CellSAM enables high throughput cell segmentation across multiple tissue types and imaging modalities. [Demo](#)

Protex Protex enables natural language queries for specific protein functions to accelerate drug discovery. Protex won second place and sponsored prizes at the 2023 Scale AI Hackathon. [Demo](#)

Jane Jane is a question answer system for immunology, and is actively used by multiple immunology labs. [Demo](#)