Mayank Keoliya

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Education

University of Pennsylvania *Aug. 2023 – Present*
PhD, Computer and Information Science
Advisor: Mayur Naik

National University of Singapore *Aug. 2019 – May 2023*
Bachelor's in Computer Science
Advisor: Ilya Sergey

Research Interests

I aim to enhance the safety and adoption of ML models in healthcare by (1) developing new interpretable models for critical applications like cancer treatment prediction and sepsis detection, (2) enabling multi-modal reasoning over diverse clinical data sources, and (3) ensuring these models are explainable and trusted by clinicians in high-stakes decisions.

Publications

Distinguished/Spotlight Paper

KardiaLM: Foundation Model for ECG Comprehension
Mayank Keoliya, Seewon Choi, Eric Wong, Rajeev Alur, Mayur Naik
Under submission

Stable Prediction of Adverse Events in Medical Time-Series Data
Mayank Keoliya*, Seewon Choi*, Eric Wong, Rajeev Alur, Mayur Naik
Under submission

ESCA: Contextualizing Embodied Agents via Scene-Graph Generation
Jiani Huang, **Mayank Keoliya**, Neelay Velingker, Ziyang Liu, Matthew Kuo, Amish Sethi, Mayur Naik, Sernam Lim
NeurIPS '25

Synthesizing Faithful Explanations for Treatment Effect Estimation
Yinjun Wu*, **Mayank Keoliya***, Kan Chen, Neelay Velingker, Emily Getzen, Qi Long, Mayur Naik, Ravi Parikh
ICML '24

Mostly Automated Proof Repair for Verified Libraries
Kiran Gopinathan, **Mayank Keoliya**, Ilya Sergey
PLDI '23

Simulating Noisy Channels for DNA Storage
Mayank Keoliya, Puru Sharma, and Djordje Jevdjic
ISPASS '22

Ongoing Projects

Trustworthy AI for Early Sepsis Detection and Breast Cancer Treatment
Lead PhD student on a ARPA-H grant to develop trustworthy AI for early sepsis prediction, and treatment recommendation for breast cancer. Working with clinicians at Penn to train and deploy explainable yet accurate models on data from 300K patients across Pennsylvania.

Explainable Mortality Prediction
Applying our ICML '24 work, DISCRET to mortality prediction. Our model generates explanations, which are quantitatively more robust and faithful than traditional post-hoc methods like LIME and SHAP. Currently in user studies with over 50 oncologists at Penn Medicine and other health systems.

Work Experience

VERSE Lab, NUS
Research Assistant *May 2022 – April 2023*

- Part of team that devised a novel proof repair technique which enables dynamic certification of critical systems such as financial trading and aircraft navigation
- Designed and implemented an efficient invariant synthesis algorithm
- Work published at PLDI '23

Jevdjic Lab, NUS
Research Assistant *Aug 2021 – May 2022*

- Investigated noise in DNA sequencing, particularly with next-gen Nanopore sequencing
- Discovered key insights about the relationship between sequencing errors and molecule position within a DNA strand, published at ISPASS'22

Awards

- **Outstanding Undergraduate Researcher**, NUS (top 5 in a cohort of 6k) 2023
- **GIC Medal**, NUS Honors College (best computing student) 2023
- **President's Honour Roll**, NUS Honors College 2023
- **SIGPLAN-M Travel Grant** 2022

Teaching Experience

Head TA, Software Analysis, CIS 547
University of Pennsylvania *Aug 2025 – Dec. 2025*

TA, Advanced Functional Programming, CIS 552
University of Pennsylvania *Aug 2024 – Dec. 2024*

TA, Intro to Programming, CS1101S
National University of Singapore *Aug 2020 – Dec. 2020*

References

Mayur Naik (PhD Advisor)
Professor and Graduate Chair
Computer and Information Science
University of Pennsylvania
mhnaik@seas.upenn.edu
215-573-1856

Dr. Ravi B Parikh (Collaborator)
Associate Professor
School of Medicine
Emory University
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