Kulunu Dharmakeerthi

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My research lies at the intersection of statistics and AI. Recently, I have proposed and lead a research project in collaboration with **Quantitative Research and AI research teams.**

Education

University of Chicago — **Chicago, IL** — **(April 2027 expected)**
- **PhD in Statistics**

University of Cambridge — **Cambridge, UK** — **Sept 2020 – June 2021**
- **MAST - Tripos Part III (Mathematics)**
- Cambridge-Allen Scholarship

University of California, Berkeley — **Berkeley, CA** — **Sept 2018 – May 2019**
- Exchange Year. Global Scholar Award.

University of Melbourne — **Melbourne, Australia** — **Jan 2017 – Dec 2019**
- **Bachelor of Science.** Mathematics/Statistics. First Class Honours

Awards

Cambridge-Australia Allen Award, The University of Cambridge, 2020
Full scholarship to study at The University of Cambridge. One full Allen scholarship given in Australia.
AMSI Research Scholarship, Australian Mathematical Sciences Institute, 2019
Award to support mathematics research at The University of Melbourne
Global Scholars Award , University of Melbourne, 2018;
Dean's Honours, University of Melbourne, 2017-
Academic Excellence Award, Consulate General of Sri Lanka, 2017

Research

Liang, T., Dharmakeerthi, K.*, and Koriyama, T., 2024. **Denoising Diffusions with Optimal Transport: Localization, Curvature, and Multi-Scale Complexity** *Under Review at the Annals of Statistics (AoS)*.

Dharmakeerthi, K.*, Hur, Y. and Liang, T., 2024. **Learning When the Concept Shifts: Confounding, Invariance, and Dimension Reduction.** *Revisions at the Journal of the American Statistical Association (JASA)*.

Dharmakeerthi, K.*, El-Laham, Y., (2025). **Beyond Linear Diffusions: Improved Representations for Rare Conditional Generative Modeling** *SPIGM @ Neurips*.

Dharmakeerthi, K.* **Optimal Diffusion in High Dimensions: Randomized Covariance and Separation Structures.** *Preprint*.

Dharmakeerthi, K.* **Causality via Quasi-Experiments** *Working Paper*

Sachs R.*, Dharmakeerthi, K. et al. **An Important Aspect of Modelling Chromosome Aberration induced in High Linear Energy Threshold Radiation Fields** *Working Paper*.

Experience

Quantitative Research x AI Research — **JP Morgan** — **June - Aug 2025**
- Unique opportunity to lead a project across Quantitative Research and AI Research teams at JP Morgan.
- Developing theory and methodology for GenAI-based conditional sampling in low-data settings. Focus on rare-event modeling with specific application to financial time series.
- (Potential) Applications in front office: modeling behaviors in emerging markets. Applications in market risk: modeling extreme market events (financial crises etc.)
- ***Paper to appear SPIGM@NeurIPS***

Data Science Consultant — **University of Chicago** — **2021-2023**
- ***Team Leader***: guided PhD researchers in providing members of the University of Chicago research community with guidance on statistical methods and data analysis.
- *Delivered services to over 20 different clients.* Applications spanned sociology, economics, biology and public policy
- ***Acknowledged with Best Consultant Awards in consecutive years.***

Research Intern **University of California, Berkeley** **2020**

- *Machine learning and synergy analysis* for estimating chromosome aberration in high-LET mixed-beam radiation fields.
- Handling murine tumorigenesis *data provided by NASA Space Radiation Laboratory*. Navigating unique issues stemming from experimental data (missingness, 0-inflation, etc.)
- ***Helped deliver vital information about cancer risks associated with long-term space travel***.

Research Intern **Australian Math. Sci. Institute** **2019**

- *3-month appointment to conduct research* for the Australian Mathematical Sciences Institute.
- Mixture Modelling and genetic algorithms explored to generate *adversarial test spaces for analyzing algorithm robustness.*
- *Allowed researchers to gain a deeper understanding of when/how to apply certain classification strategies.*

Public Service

Educator **Berkeley Engineers and Mentors** **2018-2019**

- Created and delivered a science curriculum for primary and middle schools in Berkeley, California.

Educator **S.A.I.L Program** **2018**

- Taught and provided educational resources for the Sudanese Australian refugee community

Graduate Teaching

Teaching Assistant **University of Chicago** **2021-**

STAT 30100 (Mathematical Statistics), STAT 31700 (Probability), CSMC 25025 (Machine Learning/Large Scale Data Analysis)

Skills

Programming: R, Python (pytorch, numpy, pandas etc.)

Quantitative: Statistics, Probability, Data Analysis, Machine Learning, Optimization