Utkarsh Sharma

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https://u-sharma.github.io

Education	JOHNS HOPKINS UNIVERSITY	2017 - 2021
	PhD in Physics	
	Thesis: Universality of scaling: perspectives in artificial intelligence and physics	
	Advisor: Jared Kaplan, co-creator of GPT-3 and co-founder of Anthropic	
	INDIAN INSTITUTE OF TECHNOLOGY BOMBAY	2013 - 2017
	Bachelor of Technology (Electrical Engineering)	
Current Employment	Research Fellow, Harvard Medical School	
	Postdoctoral Fellow, Brigham and Women's Hospital	
	Postdoctoral Scholar, Broad Institute	
Prior Experience	IMPROVE THE NEWS FOUNDATION	2022
	Independent Consultant (Machine Learning)	
	X, THE MOONSHOT FACTORY (GOOGLE X)	2020
	Research Intern (Machine Learning)	
	TATA INSTITUTE OF FUNDAMENTAL RESEARCH, MUMBAI	2015 - 2017
	Visiting Researcher (Physics)	
	HUMBOLDT UNIVERSITY, BERLIN	2016
	Visiting Researcher (Physics)	
Honors	Best poster award in "technology" category	2023
	Annual retreat of the Broad Institute of MIT and Harvard	
	Finalist, Three Minute Thesis Competition JHU	2021
	Explaining PhD thesis to a general audience in 3 minutes	
	Graduated in top 10 percentile	2017
	Class of 2017, IIT Bombay	
	Indian Institute of Teachnology, Joint Entrance Examination (IIT-JEE)	2013
	Ranked 101 out of over 1.4 million candidates	
	Indian National Physics Olympiad	2013
	Among top 35 achievers from across India	
	Indian National Mathematical Olympiad	2013
	Among top 35 achievers from across India	
	Regional Mathematical Olympiad	2013
	State Rank 5 in the state of UP, the largest state in India	
	Kishor Vaigyanik Protsahan Yojana (KVPY) fellowship	2012-2013
	Among top 100 awardees from across India	

Ongoing Projects

Inventing the world's most sensitive assay for fecal profiling

- Co-invented the most sensitive assay to date that measures proteins from feces. (patent filing in process)
- Allows near real-time monitoring of health changes in response to dietary or microbiome modulation.
- Will find application in noninvasive diagnostics for clinical settings along with research applications.

Publications (ML)	Y Bahri, E Dyer, J Kaplan, J Lee, U Sharma "Explaining neural scaling laws" Proc. Natl. Acad. Sci. USA 121 (27), e2311878121 (authors in alphabetical order) Sharma, U.; Kaplan, J. "Scaling Laws from the Data Manifold Dimension. J. Mach. Learn." Res. 2022, 23 (9), 134.
Publications (Physics)	Chen, H., Kaplan, J. Sharma, U. AdS3 reconstruction with general gravitational dressings. J. High Energ. Phys. 2019, 141 (2019). https://doi.org/10.1007/JHEP07(2019)141 (authors in alphabetical order) Bhattacharyya, S., Mandal, A.K., Mandlik, M. et al. Currents and radiation from the large D black hole membrane. J. High Energ. Phys. 2017, 98 (2017). https://doi.org/10.1007/JHEP05(2017)098 (authors in alphabetical order)
Unpublished Work	**Optimization with Birkhoff Polytopes** (Undergraduate Thesis) https://u-sharma.github.io/BirkhoffPolytopes.pdf
Additional Projects	**Luni-Solar Calendar in Python (Panchanga)** 2020-2021 Modernized the ancient astronomical algorithm to utilize NASA's simulated data; Designed and coded singlehandedly from ground up. **COVID-19 Design Challenge**: Optimal Routing Algorithm March 2020 Organized by the Johns Hopkins Center for Bioengineering Innovation and Design. Our project was recommended by Dr Kevin Munjal, EMS System Director, Mount Sinai Health System, New York City
Environmental Work	Spent a growing season on the ground on a medium sized farm in the Gangetic Plains of North India. The aim was to understand the reasons behind rapid desertification of India and its effect on the economic condition of farmers.
Other Activities	**Service**: Served as a grader in the International Physics Olympiad, 2015. **Conferences**: Microbiome 2022 (CSHL), Systems Immunology 2023 (CSHL), Simons Collaboration on the Nonperturbative Bootstrap Annual Meeting, 2019, Bootstrap 2018, 2019 (Simons Bootstrap Collaboration) **Outreach**: Physics Fair 2018, 2019: Participated in the Johns Hopkins physics fair to showcase physics research in a simple, practical manner to school students