

# Utkarsh Sharma

PhD 2021 (Machine Learning and Physics)

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<https://u-sharma.github.io>

<b>Education</b>	JOHNS HOPKINS UNIVERSITY PhD (Advsor: Jared Kaplan, co-creator of GPT-3)	2017 - 2021
	INDIAN INSTITUTE OF TECHNOLOGY BOMBAY Bachelor of Technology (Electrical Engineering)	2013 - 2017
<b>Experience</b>	X, THE MOONSHOT FACTORY (GOOGLE X) Research Intern (Machine Learning)	2020
	TATA INSTITUTE OF FUNDAMENTAL RESEARCH, MUMBAI Visiting Researcher (Physics)	2015 - 2017
	HUMBOLDT UNIVERSITY, BERLIN Visiting Researcher (Physics)	2016
<b>Science Communication</b>	Three Minute Thesis Competition JHU, 2021: I was a finalist in the competition. The aim was to explain the entire PhD dissertation research to a <b>non-technical audience</b> in 3 minutes.	
	Physics Fair 2018, 2019: Participated in the Johns Hopkins physics fair to showcase physics research in a simple, practical manner to school students	
<b>Honors</b>	Graduated in top 10 percentile Class of 2017, IIT Bombay	2017
	Indian Institute of Teachnology, Joint Entrance Examination (IIT-JEE) Ranked 101 out of over 500000 candidates	2013
	Indian National Physics Olympiad Among top 35 achievers from across India	2013
	Indian National Mathematical Olympiad Among top 35 achievers from across India	2013
	Regional Mathematical Olympiad State Rank 5 in the state of UP, the largest state in India	2013
	Kishor Vaigyanik Protsahan Yojana (KVPY) fellowship Among top 100 awardees from across Indi	2012-2013
<b>Projects</b>	<b>Luni-Solar Calendar (Panchanga)</b> Designed singlehandedly from ground up using NASA's astronomical data.	2020-2021
	<b>COVID-19 Design Challenge:</b> Optimal Routing Algorithm 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	March 2020
<b>Publications (ML)</b>	Explaining Neural Scaling Laws Y. Bahri, E. Dyer, J. Kaplan, J. Lee, U. Sharma arXiv:2102.06701 [cs.LG]	

A Neural Scaling Law from the Dimension of the Data Manifold  
U. Sharma, J. Kaplan  
arxiv:2004.10802 [cs.LG]

**Publications  
(Physics)**

AdS<sub>3</sub> reconstruction with general gravitational dressings  
H. Chen, J. Kaplan and U. Sharma.  
arXiv:1905.00015 [hep-th]  
DOI:10.1007/JHEP07(2019)141

Currents and radiation from the large D black hole membrane  
S. Bhattacharyya, A. Mandal, M. Mandlik, U. Mehta, S. Minwalla, U. Sharma and S. Thakur.  
arXiv:1611.09310 [hep-th]  
DOI: 10.1007/JHEP05(2017)098

**Unpublished  
Work**

**Optimization with Birkhoff Polytopes** (Undergraduate Thesis)  
<https://u-sharma.github.io/BirkhoffPolytopes.pdf>

**Other  
Activities**

**Farming:** Worked on the ground on a potato farm in India to understand farming practices and their relation to soil extinction.

**Conferences:** Bootstrap 2018, 2019 (Simons Bootstrap Collaboration),  
Simons Collaboration on the Nonperturbative Bootstrap Annual Meeting, 2019