Deependra Singh

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WORK EXPERIENCE	**Emory University** Visiting Assistant Professor, *Department of Mathematics*	Atlanta, GA Aug 2024 - Present

EDUCATION

University of Pennsylvania — Philadelphia, PA — 2019 – 2024
Ph.D., Mathematics

Title: *Admissible Groups over Global Fields*
Advisor: Prof. David Harbater

University of Pennsylvania — Philadelphia, PA — 2017 – 2019
M.S.E., Computer & Information Science (GPA 4.0/4.0)

Indian Institute of Technology Delhi — New Delhi, India — 2010 – 2014
B.Tech., Computer Science & Engineering

PUBLICATIONS

"Machine Learning approaches to the Shafarevich-Tate group of elliptic curves", with A. Babei, B. Banwait, AJ Fong, X. Huang. 20 Pages. Accepted. To appear in *Advances in Theoretical and Mathematical Physics*. Preprint available at [arXiv:2412.18576](https://arxiv.org/abs/2412.18576).

"Admissible groups over number fields". 23 Pages. Submitted. 2024 preprint available at [arXiv:2409.02333](https://arxiv.org/abs/2409.02333).

"Enhanced integrated gradients: improving interpretability of deep learning models using splicing codes as a case study", with A. Jha, J. Aicher, and Y. Barash. *Genome Biology*, Vol. 21 (2020), pp. 1–22.

"Automating relevance banding in e-Commerce search using Click Model", with V. Deolalikar. *IEEE International Conference on Big Data*, 2018, pp. 3793-3797.

"Islands of Interest: Mining concentrations of user search intent over e-commerce product categories", with N. Pradhan and V. Deolalikar. *IEEE International Conference on Big Data*, 2018, pp. 3717-3722.

AWARDS AND FELLOWSHIPS

Certificate in College and University Teaching
Penn Center for Teaching and Learning — Fall 2023

Good Teaching Award
University of Pennsylvania Mathematics Department — Spring 2021

Benjamin Franklin Fellowship
University of Pennsylvania — 2019–2024

Fellowship in Computer Science
University of Pennsylvania — 2017–2019

MHRD scholarship
Government of India — 2010–2014

TEACHING	**Emory University**	Atlanta, GA

- *Instructor*, Math-211 Multivariable calculus — Spring 2025
- *Instructor*, Math-221 Linear algebra — Fall 2024

University of Pennsylvania — Philadelphia, PA
- *Instructor*, Math-1410 Multivariable calculus — Summer 2023

Penn Pre-First Year Program — Philadelphia, PA
Program for first generation, low-income undergraduate students.
- *Instructor*, Math-C Pre-Calculus — Summer 2024
- *Teaching Assistant*, Math-A Pre-Calculus — Summer 2023

Princeton Prison Teaching Initiative — Spring 2023 – Present
Volunteer math instructor for South Woods State Prison in New Jersey.
- *Tutor*, MATH 020 Algebra — Spring 2024
- *Co-Instructor*, Math in the Courtroom — Spring 2023

University of Pennsylvania — Philadelphia, PA
- *Teaching Assistant*, Math 3610 Advanced Calculus II — Spring 2024
- *Teaching Assistant*, Math 3610 Advanced Calculus II — Spring 2024
- *Teaching Assistant*, Math 360 Advanced Calculus I — Fall 2021
- *Teaching Assistant*, Math 509 Honors Analysis II — Spring 2021
- *Teaching Assistant*, Math 240 Linear algebra and ODEs — Fall 2020

Penn Directed Reading Program — Fall 2021 – Present
Mentor for the following undergraduate reading projects:
- *Number Theory*, Molly Bradley — Spring 2024
- *Quadratic Reciprocity*, Angela Cai — Fall 2023
- *Algebraic Curves*, Max Wang — Spring 2023
- *Probablistic Methods*, Max Wang — Fall 2022
- *Covering Spaces*, Kevin You — Fall 2021

SERVICE AND FACILITATION

Emory algebra and number theory seminar — Fall 2024 - Present
Co-organizer of the Emory algebra and number theory seminar with S. Arango-Piñeros.

Emory arithmetic geometry learning seminar — Fall 2024 - Present
Co-organizer of a learning seminar at Emory University with M. Allen.
- Stacks and Brauer groups — Spring 2025
- Étale cohomology — Fall 2024

Penn graduate algebraic geometry seminar — Fall 2022 - Spring 2024
Co-organizer of the student algebraic geometry seminar with A. Kwon and E. Lennen.

Patching in arithmetic geometry — Spring 2022
Co-organizer of the graduate student seminar on patching methods in arithmetic geometry.

Math Circles — Summer 2023 - Present
Co-organizer of the Math Circles at the West Philadelphia High School with M. Ong.

Talks	**Emory algebra and number theory seminar**	
	• *Admissible groups over number fields*	Fall 2024
	Temple Graduate Student Conference in Algebra, Geometry, and Topology	
	• *Admissible groups over number fields*	Summer 2024
	Penn Algebra Seminar	
	• *Admissibility over number fields*	Spring 2024
	Penn Graduate Algebraic Geometry Seminar	
	• *Rational points on varieties and the Brauer-Manin set*	Spring 2024
	• *An introduction to Étale cohomology*	Spring 2023
	• *Admissibility over $\mathbb{Q}$*	Fall 2022
	Patching in Arithmetic Geometry	
	• *Patching division algebras over semi-global fields*	Spring 2022
	Expository Talks	
	• *Grothendieck topologies and cohomology*	Spring 2024
	• *Milnor K-theory*	Spring 2022
	• *Numerical invariants and stability on algebraic stacks*	Fall 2021
	• *Introduction to spectral sequences*	Spring 2021

Selected Conferences & Seminars	• The Legacy of John Tate, and Beyond	Spring 2025
	• The Mordell conjecture 100 years later	Summer 2024
	• RNT: Rethinking Number Theory	Summer 2024
	• Temple Graduate Student Conference in Algebra, Geometry, and Topology	Summer 2024
	• VaNTAGe Seminar	Fall 2023 - Present
	• Arizona Winter School 2024: Abelian Varieties	Spring 2024
	• Algebraic Geometry Northeastern Section (AGNeS)	Fall 2023
	• Arizona Winter School 2022: Automorphic Forms Beyond GL2	Spring 2022

Previous Work Experience	**Groupon**	Palo Alto, CA
	Data Scientist, *Search & Data Mining team*	Oct 2015 – June 2017
	Groupon	Chennai, India
	Data Scientist, *Data Science team*	Jun 2014 – Sep 2015