

Prerna

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EDUCATION

University of Kentucky

Doctor of Philosophy

- Current GPA: 4.0/4.0

Lexington, KY

Expected May 2028

Indian Institute of Technology

Masters in Science

- Msc in Mathematics
- CPI: 8.38/10.0

Bombay, India

May 2022

Maharishi Dayanand University

Bachelors in Science

- Mathematics Honors
- Percentage: 84.44%

Haryana, India

Aug 2020

RESEARCH

Algebraic Topology Project

Indian Institute of Technology - IIT

- Conducted an extensive literature review on algebraic topology, emphasizing the fundamental group.
- Worked under the supervision of Professor Saurav Bhaumik, referencing Allen Hatcher's algebraic topology textbook for comprehensive understanding.
- Applied advanced concepts of covering spaces and deck transformations to calculate fundamental groups studied spaces.
- Explored topics including compact Riemann surfaces of genus g and real and complex projective spaces of dimension n .

Jan 2022 - April 2022

Bombay, India

Project on Borsuk-Ulam Theorem and Its Equivalences

Indian Institute of Technology - IIT

- Delved deeply into the intricacies of the Borsuk-Ulam Theorem, dissecting its various statements and implications.
- Collaborated closely with Prof. Rekha Santhanam to scrutinize the interconnections between Borsuk-Ulam Theorem, Brouwer Fixed Point Theorem, and Tucker's Lemma.
- Applied acquired knowledge to prove the Ham Sandwich Theorem as a direct consequence of the Borsuk-Ulam Theorem.
- Utilized "Using Borsuk-Ulam Theorem" by Jiri Matousek as the primary reference.

May 2021 - August 2021

Bombay, India

WORK/TEACHING EXPERIENCE

Teaching Assistant - Calculus 1

University of Kentucky

- Led recitation sessions, reinforcing course materials and encouraging collaborative learning among students.
- Assisted professors in grading assignments and exams, contributing to comprehensive student assessments.
- Provided academic and personal guidance to Freshmen, aiding in their transition and fostering a supportive learning environment.

August 2023 – Present

Lexington, KY

Mentor, Summer of Science - Mathematics and Physics Club

Indian Institute of Technology

- Guided students from diverse engineering fields in in-depth exploration of Number Theory and Group Theory.
- Conducted weekly mentoring sessions to provide clarification on theoretical concepts, address doubts, and facilitate discussions on project materials.
- Reviewed and provided constructive feedback on project reports, ensuring a high standard of academic achievement and fostering a collaborative learning environment.

June 2022 – August 2022

Bombay, India

POSITION OF RESPONSIBILITY

Department Coordinator <i>Mathematics Department</i>	Aug 2021 - May 2022 <i>IIT, Bombay</i>
Core Team Member in Organizing Committee of Mathematics Olympiad <i>Mathematics Department</i>	Dec 2021 - Feb 2022 <i>IIT, Bombay</i>
Class Representative (First Year Msc. Mathematics) <i>Mathematics Department</i>	Aug 2020 - May 2021 <i>IIT, Bombay</i>

HONORS & AWARDS

AIR-46 in IIT-Joint Admission Test	2020
2nd Rank in Inter College Math's Quiz Competition in MD University, Haryana	2019
Awarded scholarship by Govt. of Haryana for securing grade A in Class 12	2018
Secured 1st rank in School in IMO and 2nd rank in school and 304th international rank in 17th SOF	2014