

Ish Shah

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Education

- 2022–2026 **Bachelor of Science**, Rutgers University, New Jersey, US, GPA: 4.0.
(expected) Major: Mathematics, Minor: Computer Science.

Interests

Harmonic analysis, analytic number theory, and partial differential equations.

Research Experience

- 2025 **Clemson REU in Number Theory**, Topic: Shimura operators on half-integral weight modular forms, Mentors: Hui Xue and Tianyu Ni.
- 2024 **DIMACS REU**, Topic: When Fourier analysis meets ergodic theory and number theory, Mentors: Mariusz Mirek and Leonidas Daskalakis.
- 2023–2024 **Aresty Research Assistant Program**, Topic: Mathematical adventures in one-dimensional physics, Mentor: Shadi Tahvildar-Zadeh.

Publications

2. *Shimura lifts of nearly holomorphic modular forms* (with Abby Linscott, Tianyu Ni, and Hui Xue). Submitted, 2025.
1. *Pointwise ergodic theorems along fractional powers of primes* (with Erik Bahnsen, Leonidas Daskalakis, and Abbas Dohadwala). **Int. Math. Res. Not. IMRN**, 2025(15). Preprint: arXiv 2412.07055.

Talks and Presentations

- Sep. 2025 *Shimura lifts of almost holomorphic modular forms*. Number Theory Seminar, Rutgers University (Piscataway, New Jersey, US).
- Jul. 2025 *A Selberg identity for nearly holomorphic modular forms*. 12th Annual Summer Undergraduate Research Symposium, Clemson University (Clemson, South Carolina, US).
- Jul. 2024 *When Fourier Analysis Meets Ergodic Theory and Number Theory*. DIMACS REU Final Presentations, Rutgers University (Piscataway, New Jersey, US).
- Apr. 2024 *Stability of Ground State of the Hydrogen Hamiltonian in One Dimension*. 20th Annual Aresty Undergraduate Research Symposium, Rutgers University (New Brunswick, New Jersey, US).

Awards

- Sep. 2025 **Maurice M. and Adrienne R. Weill Scholarship**, *Department of Mathematics, Rutgers*.
Awarded to six full-time students majoring in mathematics based on academic merit.
- Jan. 2025 **Alan Marc Schreiber Memorial Scholarship**, *School of Arts and Sciences, Rutgers*.
Awarded based on academic merit, with preference given to mathematics majors.
- Jan. 2025 **Rutgers College Scholarship**, *School of Arts and Sciences, Rutgers*.
Awarded based on academic merit.
- Dec. 2024 **Goldwater Scholarship Nomination**, *Office of Distinguished Fellowships, Rutgers*.
One of four nominees chosen from over a dozen applicants for a prestigious national STEM scholarship.
- Sep. 2024 **Excellent TA/PTL/Grader Award**, *Department of Computer Science, Rutgers*.
Awarded to four undergraduate students and several graduate students based on reviews from faculty.
- Aug. 2024 **Maurice M. and Adrienne R. Weill Scholarship**, *Department of Mathematics, Rutgers*.
Awarded to six full-time students majoring in mathematics based on academic merit.
- Feb. 2024 **Alan Marc Schreiber Memorial Scholarship**, *School of Arts and Sciences, Rutgers*.
Awarded based on academic merit, with preference to mathematics majors.

Teaching and Grading Experience

- Fall 2025 **Grader**, *Math 411 (Mathematical Analysis I)*, Professor: Mariusz Mirek.
Learning Assistant, *CS 111 (Introduction to Computer Science)*.
- Spring 2025 **Grader and Part-Time Lecturer/Teaching Assistant**, *CS 344 (Design and Analysis of Algorithms)*, Professor: Surya Teja Gavva.
Learning Assistant, *Math 152 (Calculus II)*.
- Fall 2024 **Grader and Part-Time Lecturer/Teaching Assistant**, *CS 344 (Design and Analysis of Algorithms)*, Professor: Mario Szegedy.
Learning Assistant, *Math 152 (Calculus II)*.
- Spring 2024 **Grader and Part-Time Lecturer/Teaching Assistant**, *CS 344 (Design and Analysis of Algorithms)*, Professor: Mario Szegedy.
Learning Assistant, *CS 112 (Data Structures)*.
- Fall 2023 **Learning Assistant**, *BAIT 370 (Management Information Systems)*.

Service

- 2025–2026 **President**, *Rutgers Undergraduate Math Association*.
2025–2026 **Lecturer**, *Rutgers Competitive Programming*.
2024–2025 **Public Relations Officer**, *Rutgers Undergraduate Math Association*.

Additional coursework

Audited Functional analysis/semigroup theory, harmonic analysis.
courses

Directed analytic number theory (Stein/Shakarchi *Complex Analysis*, ch. 6-7).
reading

Computer Skills

- Much experience with L^AT_EX.
- Much experience with Python (including NumPy, SciPy, and Matplotlib).
- Some experience with Maple and Wolfram Language.
- Some experience with Java, C/C++, and JavaScript.