

# Bhumika Mittal

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## EDUCATION

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### Ashoka University

Bachelor of Science, Computer Science; CGPA: **3.85**/4.00  
Minor in Mathematics, Entrepreneurial Leadership

Sonipat, India

Aug 2021 – Present

### Maheshwari Girls Public School

High School Diploma; AISSCE (Science Stream): 95.4%

Jaipur, India

Feb 2008 – July 2020

## RESEARCH/TEACHING EXPERIENCE

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### IIT Gandhinagar

Research Intern

Remote

May 2023 – Present

- Exploring frameworks for designing and evaluating DNN accelerators
- Simulating various architectures using simulators like Timeloop
- Area of work - Computer Architecture, Systems for ML, Deep Neural Networks

### IIT Roorke

Research Assistant

Remote

July 2023 – Present

- Analysing the user association techniques for wireless communication
- Conducting exploratory research on modified versions of matching algorithms
- Implementing stable marriage algorithm in Python to optimize network stability and performance
- Area of work - Wireless Communication, Matching Algorithms

### Plaksha University

Teaching Staff

Mohali, India

April 2023 - June 2023

- Curated and taught a course on Microcontrollers to 200+ high school students
- Designed Game Dev Module - built 5 mathematical and hardware games
- Helped students build various IoT Projects using ESP32 chipset and other electronic components

### Lodha Genius Program

Teaching Assistant

Sonipat, India

May 2023 - June 2023

- Worked closely with Siddharth Kankaria (from NCBS) to prepare and deliver a course on Science Communication
- Assisted 50+ students with their science communication projects and Olympiad-level math problem sets
- Organised and managed the programme logistics

### Ashoka University

3 × Teaching Assistant

Sonipat, India

Fall 2022, Spring 2023

- TA for Introduction to Computer Programming, Discrete Mathematics, Strategy through Board Games
- Conducted weekly discussion sections and office hours for 60+ students
- Responsible for designing and evaluating assignments
- Student Feedback: 4.88/5

### Program in Mathematics for Young Scientists

Mehta Fellow

Remote

Summer 2020, 21

- 2021: Research on De-Bruijn Sequences, course on Number Theory, attended various mini-courses
- 2020: Exploration research on the Fibonacci Numbers, course on the Graph Theory, completed Problem Sets

## PUBLICATION

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### On the Existence of Balanced Generalized de Bruijn Sequences

Bhumika Mittal, Haran Mouli, Eric Tang, and Matthew Baker

Discrete Mathematics Journal

April 2023

- *Abstract:* A balanced generalized de Bruijn sequence with parameters  $(n, l, k)$  is a cyclic sequence of  $n$  bits such that (a) the number of 0's equals the number of 1's, and (b) each substring of length  $l$  occurs at most  $k$  times. We determine necessary and sufficient conditions on  $n, l$ , and  $k$  for the existence of such a sequence.

## WORK EXPERIENCE

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### Atlas Fellowship

*Talent Coordinator*

Remote

*Aug 2022 – Oct 2022*

- Strategised the Outreach for the Atlas Fellowship launch in India.
- Ran a campaign and managed a team of 12 to reach out 2500 top schools and 3000 coaching centres in India.
- Achieved the 148% increase in applications for the program.

### Lehigh University

*Innovator*

Bethlehem, US

*May 2022 – Jun 2022*

- Consulted Global Good Funds, a venture capital that invests in companies led by social entrepreneurs with a preference for companies led by people of color and women.
- Established clear and identifiable metrics to measure the non-monetary impact (such as ESG goals) of the ventures to determine the optimal investment strategies.

### Young Scholars Programme (YSP)

*Office Counselor*

Sonipat, India

*May 2022*

- Developed an infrastructure for the program by integrating different platforms
- Automated various processes for the program including workshop allocation, letter sharing, etc.

### Brand warikoo

*Tech and Product Intern*

Remote

*Feb 2021 – April 2022*

- Ideated and built the *WebVeda* platform for the courses, which hosts 300k learners and helped in generating revenue of \$1Mn within 10 months.
- Managed different tech aspects of the brand, including payment gateway, email integration, etc.

## HONORS AND AWARDS

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2022	<b>Undergraduate Research Excellence Award</b> , Department of Mathematics, Ashoka University
2021-23	<b>Dean's List</b> (every semester), Dean of Academic Affairs, Ashoka University
2022	<b>AWS AI &amp; ML Scholarship</b>
2019	<b>Most Powerful and Serene (Best Student) Award</b> , Maheshwari Girls Public School
2019	<b>Winner</b> , National Ideationology Challenge
2018	<b>Best in IT</b> , Maheshwari Girls Public School
2018	<b>School Topper</b> , National Cyber Olympiad
2017	<b>Runner-up</b> , District Level Shot Put Competition

## OTHER ACTIVITIES

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### Academic Affairs Board

*CS Representative*

Ashoka University

*May 2023 – Present*

- Working with the Department of Computer Science, and the Academic Advisory Board

### Computer Science Society

*Advisor, Interim President*

Ashoka University

*Aug 2022 – Present*

- Conducted weekly workshops and events, and led 20+ active members team

### Entrepreneurship Club

*Director of Events*

Ashoka University

*Jan 2022 – May 2023*

- Ideated and organised various events, like Startup Ashoka, to encourage entrepreneurial spirit among students

### Mathematics Colloquium

*Presenter*

Ashoka University

*April 2022*

- Presented research paper on deBruijn sequences to senior undergraduates, Ph.D. students and faculty members

## SKILLS

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**Programming:** Python3, C/C++, Java, Assembly, Shell R, SQL, HTML/CSS, Markdown, L<sup>A</sup>T<sub>E</sub>X

**Others Tools:** Github, Arduino, ESP32, Raspberry Pi Pico, WordPress, MS Excel

**Languages:** Hindi, English