


Bhumika Mittal

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EDUCATION

Ashoka University

Bachelor of Science, Computer Science; CGPA: **3.86**/4.00
Minor in Mathematics, Entrepreneurial Leadership and Strategy

Sonipat, India

2021 – Present

Maheshwari Girls Public School

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

Jaipur, India

2018 – 2020

TECHNICAL SKILLS

Programming: Python3, C/C++, Java, Assembly, Shell, SML, SQL, HTML/CSS, JavaScript, Solidity, XML

Tools: Timeloop/Accelergy, Hyperledger Fabric, Docker, Git, MATLAB, \LaTeX

Others: Arduino, ESP32, Raspberry Pi Pico, PowerBi, WordPress, MS Excel

Languages: Hindi, English

RESEARCH EXPERIENCE

Max Planck Institute for Software Systems

Visiting Research Fellow

Saarbrücken, Germany

Jan 2024 – Present

- Project: Epoch-based Graph Processing Database
- Analyzing graph data access patterns during the execution of algorithms
- Area of work - Computer Architecture, Systems for Big Data, Graph Processing

Ashoka University

Research Assistant

Sonipat, India

Nov 2023 – Present

- Speeding up the Number theoretic transform for Lattice-Based Cryptography
- Area of work - Post-quantum cryptography, Hardware Security

IIT Gandhinagar

Research Intern

Remote

May 2023 – Sept 2023

- Designed a dedicated hardware accelerator tailored for encoder-based models
- Simulated various architectures using simulators like Timeloop
- Area of work - Computer Architecture, Systems for ML, Deep Neural Networks

Lehigh University

Research Assistant

Bethlehem, US

May 2022 – Jun 2022

- Consulted Global Good Funds, a venture capital firm
- Established clear and identifiable metrics to evaluate ESG impact
- Measured the non-monetary impact for ESG goals of the ventures
- Strategized the optimal investment approaches for the Global Good Fund

Program in Mathematics for Young Scientists

Mehta Fellow

Remote

Summer 2020, 21

- Research project on de Bruijn Sequences proposed by Prof Matt Baker
- Completed Number Theory and Advanced Graph Theory course involving daily lectures and problem sets
- Exploratory Project on Fibonacci sequences

PUBLICATIONS

Edge-Aware Language Model Acceleration

ongoing

Tom Glint, **Bhumika Mittal**, Santrippta Sharma, Abdul Ronak, Aravind Krishna, Joycece Mekie

- Designed a dedicated hardware accelerator tailored for encoder-based models (based on BERT) to facilitate their seamless integration on edge devices.
- Proposed a Near Data Processing paradigm-based accelerator design which achieves a 1.2x speedup, a 58% reduction in area, and a 9x reduction in power compared to the state-of-the-art edge DNN accelerator

On the Existence of Balanced Generalized de Bruijn Sequences

Discrete Mathematics Journal

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

April 2023

- 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. Determine necessary and sufficient conditions on n, l , and k for the existence of such a sequence.

TEACHING EXPERIENCE

Ashoka University

Sonipat, India

5 × Teaching Assistant

- Undergraduate Teaching Assistant for the following courses:
 - * Tech Law & Policy (Spring 2024)
 - * Data Structures (Monsoon 2024)
 - * Discrete Mathematics (Spring 2023)
 - * Strategy through Board Games (Spring 2023)
 - * Introduction to Computer Programming (Monsoon 2023)
- Student Feedback: 4.88/5

Plaksha University

Mohali, India

Teaching Staff

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

Sonipat, India

Teaching Assistant

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

WORK EXPERIENCE

Atlas Fellowship

Remote

Talent Coordinator

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.

Young Scholars Programme (YSP)

Sonipat, India

Office Counselor

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

Remote

Tech and Product Intern

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

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

OTHER ACTIVITIES

Undergraduate Science Research Fest <i>Student Organiser</i> <ul style="list-style-type: none">Organising the poster presentation session, sci-art, and guest invites for an upcoming science fest	Ashoka University <i>Jan 2024 – Present</i>
Academic Affairs Board <i>CS Student Representative</i> <ul style="list-style-type: none">Working with the Department of Computer Science, and the Academic Advisory Board	Ashoka University <i>May 2023 – Present</i>
Students@Systems <i>Committee Member</i> <ul style="list-style-type: none">Organizing talks, podcasts, and panels that serve the students in the Systems community	Virtual <i>Oct 2023 – Present</i>
ACM SPLASH 2023 <i>Student Volunteer</i> <ul style="list-style-type: none">Working with the organizers as a student volunteer to organise SPLASH conference	Virtual <i>Sept 2023 – Oct 2023</i>
IEEE Ashoka Student Branch <i>Co-director of IT</i> <ul style="list-style-type: none">Leading tech projects and conducted Computational STEM workshop to promote the STEM culture	Ashoka University <i>Aug 2023 – Present</i>
Computer Science Society <i>Student Advisor, Interim President</i> <ul style="list-style-type: none">Spearheaded the team of 50+ active members to rebuild and foster the CS culture at the university through weekly workshops and various events	Ashoka University <i>Aug 2022 – Present</i>
Entrepreneurship Club <i>Director of Events</i> <ul style="list-style-type: none">Ideated and organised various events, like Startup Ashoka, to encourage entrepreneurial spirit among students	Ashoka University <i>Jan 2022 – May 2023</i>
Mathematics Colloquium <i>Presenter</i> <ul style="list-style-type: none">Presented research paper on deBruijn sequences to senior undergraduates, Ph.D. students and faculty members	Ashoka University <i>April 2022</i>