Bhumika Mittal

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EDUCATION

Ashoka University   Sonipat, India
Bachelor of Science, Computer Science; CGPA: **3.85**/4.00   *Aug 2021 – Present*
Minor in Mathematics, Entrepreneurial Leadership

Maheshwari Girls Public School   Jaipur, India
High School Diploma; AISSCE (Science Stream): 95.4%   *Feb 2008 – July 2020*

TECHNICAL SKILLS

Programming: Python3, C/C++, Java, Assembly, Shell, SML, R, MySQL, HTML/CSS, XML
Tools: Timeloop, Accelergy, Docker, Git, MATLAB, LaTeX
Others: Arduino, ESP32, Raspberry Pi Pico, Linux, PowerBi, WordPress, MS Excel
Languages: Hindi, English

RESEARCH EXPERIENCE

IIT Gandhinagar   Remote
Research Intern   *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   Bethlehem, US
Research Assistant   *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   Remote
Mehta Fellow   *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   *In Progress*
*Tom Glint, **Bhumika Mittal**, Santripta Sharma, Abdul Ronak, Aravind Krishna, Joycee 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

4 × Teaching Assistant
Fall 2023, Spring 2023, Fall 2022

- Undergraduate Teaching Assistant for Data Structures, Introduction to Computer Programming, Discrete Mathematics, Strategy through Board Games
- Conducted weekly discussion sections and office hours for 95+ students
- Responsible for designing and evaluating assignments
- 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

ACM SPLASH 2023   Virtual

Student Volunteer   *Sept 2023 – Present*

- Working with the organizers as a student volunteer to organise SPLASH conference

Academic Affairs Board   Ashoka University

CS Representative   *May 2023 – Present*

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

IEEE Ashoka Student Branch   Ashoka University

Co-director of IT   *Aug 2023 – Present*

- Leading tech projects and conducted Computational STEM workshop to promote the STEM culture

Computer Science Society   Ashoka University

Student Advisor, Interim President   *Aug 2022 – Present*

- Spearheaded the team of 50+ active members to rebuild and foster the CS culture at the university through weekly workshops and events

Entrepreneurship Club   Ashoka University

Director of Events   *Jan 2022 – May 2023*

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

Mathematics Colloquium   Ashoka University

Presenter   *April 2022*

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