




# DEBARSHI ROY

+91-7076750098 | debarshiroy056@gmail.com

 [LinkedIn Profile](#) |  [GitHub Profile](#)

Kolkata, West Bengal - 700030, India

## ACADEMIC EXPERIENCE

- **Indraprastha Institute of Information Technology Delhi**  5<sup>th</sup> May, 2025 - 4<sup>th</sup> July, 2025  
Research Intern in the Microbiome Informatics Lab of Computational Biology Department New Delhi, Delhi, India
  - I worked on a project titled '**Disease-Oriented Analysis of Human Microbiome Metadata: Toward LLM-Based Predictive Models**', which focuses on leveraging large language models (LLMs) to develop predictive frameworks based on disease-specific patterns in human microbiome metadata.
- **Indian Institute of Technology Guwahati**  2<sup>nd</sup> January, 2024 - 20<sup>th</sup> December, 2024  
Former Research Assistant in the MARS Lab of Computer Science & Engineering Department Guwahati, Assam, India
  - Worked for Teaching Assistant of the course "**Introduction to Computing**" (CS 101), Course Instructors: Prof. T. Venkatesh & Dr. John Jose, from January, 2024 - May, 2024.
  - Worked for Teaching Assistant of the course "**Digital Design & Computer Architecture**" (CS 322M), Course Instructor: Prof. Jatindra Kumar Deka, from July, 2024 - November, 2024.
  - [Experience Certificate](#)
- **Indian Institute of Science Education and Research Bhopal**  22<sup>nd</sup> July, 2023 - 31<sup>st</sup> December, 2023  
Former JRF in the Electrical Engineering and Computer Science Department Bhopal, Madhya Pradesh, India
  - Worked for Teaching Assistant Position for the course **Discrete Mathematics (ECS 201)**, Course Instructor: Dr. Kundan Kandhway.

## EDUCATION

- **Indraprastha Institute of Information Technology Delhi** July, 2025 - July, 2027  
Master of Technology in Computational Biology New Delhi, Delhi, India
- **Maulana Abul Kalam Azad University of Technology** June, 2019 - June, 2023  
Bachelor of Technology in Computer Science & Engineering Kolkata, West Bengal, India
  - CGPA: 8.80/10.00
  - [Marksheets & Degree Certificate](#)
- **Chakdaha Ramlal Academy** June, 2018  
Higher Secondary Education (Class 12) Chakdaha, West Bengal, India
  - Marks (Percentage): 76%
  - [Marksheet & Certificate](#)
- **Gangnapur High (H.S.) School** May, 2016  
Secondary Education (Class 10) Ranaghat, West Bengal, India
  - Marks (Percentage): 90.57%
  - [Marksheet & Certificate](#)

## PROJECTS

- **Project A: Disease-Oriented Analysis of Human Microbiome Metadata: Toward LLM-Based Predictive Models** at IIIT Delhi  
Tools: [R, Python, Pandas, NumPy, Seaborn, Matplotlib, SciPy]
  - Cleaned, visualized, and engineered microbiome metadata (20K+ samples) by handling missing values, encoding categorical variables, and preparing the dataset for downstream machine learning and LLM-based applications.
  - Performed detailed exploratory data analysis including group-wise distributions, correlation heatmaps, and statistical tests to uncover patterns across age, BMI, gender, disease category, and body site.

- Trying to design a structured pipeline to convert heterogeneous clinical metadata into LLM-compatible format, enabling advanced disease classification and semantic reasoning in biomedical NLP workflows.

#### • **Project B: [Scalable and Secure Consensus]**

*in Association with IIT Guwahati*

Tools: [Python, Matlab]



- Reducing Quorum Sizes and Integrating Hybrid Encryption in Privacy Preserving Consensus like Oblivious Paxos(OPaxos).
- Reducing Quorum Sizes by implementing **Grid Quorums**.
- Hybrid Encryption is achieved by **combining Secret Sharing with Symmetric Encryption**.
- **Project Report**
- **Project Presentation**

#### • **Project C: [A Survey Towards Secure, Adaptive, and Scalable Prefetching]**

*in Association with IIT Guwahati*

Tools: []

- Prepared a survey report on various Prefetching Mechanisms in the context of Cache Prefetching, Hybrid Software-Hardware Prefetching and Operating Systems Prefetching w.r.t I/O Devices.
- **Project Report**

#### • **Project D: [A Survey on various Lightweight Cryptographic Algorithms]**

*in Association with IIT Guwahati*

Tools: []

- Prepared a survey report on various Lightweight Cryptographic Algorithms for Resource Constrained IoT Devices.
- Also compared those Lightweight Cryptographic Algorithms based on various Hardware and Software Performance Metrics.
- **Project Report**

## ACHIEVEMENTS

#### • **GATE CS/IT 2023 Qualified**

*Scorecard Validity: till 31<sup>st</sup> March, 2026*

*Organized by IIT Kanpur*

- During my GATE CS/IT Preparation, I prepared for all Core Computer Science Subjects according to the GATE CS/IT Syllabus.
- **GATE CS/IT Scorecard of 2023**

## SKILLS

- **Programming Languages:** C, C++, Python, R
- **Specialized Area:** Biological Data Analysis, BioStatistics, Computational Metagenomics, Computational Genomics, Computer Organization & Architecture, Computer Networks, Operating Systems, DBMS
- **Other Tools & Technologies:** R Studio, gem5, Wireshark, Pandas, NumPy, Seaborn, Matplotlib, SciPy
- **Research Skills:** LaTeX, PowerPoint, Excell, Word

## VOLUNTEER EXPERIENCE

◦

#### **Volunteer Role A**

*15<sup>th</sup> March, 2024 - 16<sup>th</sup> March, 2024*

*in Association with IIT Guwahati*



- \* I worked as a Volunteer in "Workshop on Pedagogy Training for Teaching & Research Excellence" organized by The **CSE Department of IIT Guwahati**.
- \* Skills developed: Canva, PowerPoint, Photography.

◦

#### **Volunteer Role B**

*21<sup>st</sup> June, 2024 - 3<sup>rd</sup> July, 2024*

*in Association with IIT Guwahati*



\* I participated as a Volunteer in "IEEE India Council supported IIT Guwahati Campus Immersion Program-2024", organized by The CSE Department of IIT Guwahati.

\* Skills developed: Canva, PowerPoint, Photography, Managerial Capability organising for a large program.

#### Volunteer Role C

26<sup>th</sup> October, 2024

*in Association with IIT Guwahati*



\* I participated as a Volunteer to the VLSI Society of India North-East Chapter inaugurated on 26<sup>th</sup> October, 2024, at IIT Guwahati, Assam.

\* Learned about a lot of things about the current semi-conductor developments among various industries in our country.

#### Volunteer Role D

15<sup>th</sup> - 18<sup>th</sup> December, 2024

*in Association with IIT Guwahati*



\* I had the privilege of serving as an active volunteer at IEEE ANTS and AIORI(Advanced Internet Operations Research in India) - 1(co-located with IEEE ANTS), held at IIT Guwahati from 15<sup>th</sup> to 18<sup>th</sup> December, 2024.

### ADDITIONAL INFORMATION

---

#### Languages:

- \* English (Professional working proficiency)
- \* German (Professional working proficiency)
- \* Hindi (Limited working proficiency)
- \* Bengali (Native or bilingual proficiency)

**Hobbies:** Cricket, Chess, Swimming, Drama

### REFERENCES

---

\* **Dr. Tarini Shankar Ghosh**

Assistant Professor, Department of Computational Biology  
Indraprastha Institute of Information Technology Delhi, New Delhi-110020, India  
Email: [tarini.ghosh@iiitd.ac.in](mailto:tarini.ghosh@iiitd.ac.in)  
Phone: +91-9692810283  
*Relationship: Project Supervisor in IIIT Delhi*

\* **Dr. John Jose**

Associate Professor, Department of Computer Science & Engineering  
Indian Institute of Technology Guwahati, Guwahati, Assam-781039, India  
Email: [johnjose@iitg.ac.in](mailto:johnjose@iitg.ac.in)  
Phone: +91-9048665842  
*Relationship: Supervisor in IIT Guwahati*

\* **Dr. Debraj Chatterjee**

Assistant Professor, Department of Computer Science & Engineering  
Techno International, Newtown, Kolkata, West Bengal-700156, India  
Email: [debraj.chatterjee@tict.edu.in](mailto:debraj.chatterjee@tict.edu.in)  
Phone: +91-9123315718  
*Relationship: Guide & Mentor during Undergraduation*

\* **Dr. Bikash Sadhukhan**

Assistant Professor, Department of Computer Science & Engineering  
Techno International, Newtown, Kolkata, West Bengal-700156, India  
Email: [bikash.sadhukhan@tict.edu.in](mailto:bikash.sadhukhan@tict.edu.in)  
Phone: +91-9433635474  
*Relationship: Guide & Mentor during Undergraduation*

### ACKNOWLEDGEMENT

---

I affirm that the information provided in this Resume is true to the best of my knowledge and belief. I am prepared to provide necessary documentation or clarification if required.