

Shoubhik Chandan Banerjee

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Education

August 2022 – Present **University of Massachusetts Boston | Boston, US**
PhD in Biophysics
CPI: **3.93** (on a 4-point scale)

Aug 2017 – May 2022 **Indian Institute of Science Education and Research Bhopal | Bhopal, India**
B.S.– M.S. Dual Degree in Biological Sciences
CPI: **9.04** (on a 10-point scale)

Research Experience

August 2022 – Present **Kao Lab, UMB**
PhD student
Supervised by Dr. Albert Kao, Department of Biology, University of Massachusetts Boston

Project Understanding impact of changing leadership on individual error corrections and decision-making in homing pigeons.

May 2021 – May 2022 **CEBP Lab, IISER Bhopal**
Masters Thesis Researcher
Supervised by Dr. Rati Sharma (Co-PI), Department of Chemistry, IISER Bhopal.

Project 1 *Deep Learning methods for accurate detection and tracking for behavioral studies in *C. elegans*.*
Used current state-of-the-art Deep Learning models (YOLO & StrongSORT) for developing a robust, accurate, and real-time worm tracker.

Project 2 *Simulating coupled Viral-T cell population dynamics driven by fractional Gaussian noise.*
- Used the Euler-Maruyama method to simulate coupled viral and T cell population dynamics driven by fractional Gaussian noise.

May 2019 – July 2019 **CEBP Lab, IISER Bhopal**
Summer Research Student

Project *Analyzing the effect of Extrinsic Noise on mRNA translation.*
- Analyzed the effects of Extrinsic Ornstein-Uhlenbeck Noise on mRNA Residence Time using a Python 3 based implementation of the EXTRANDE algorithm and running Monte-Carlo Simulations on a Non-Equilibrium Statistical Mechanics TASEP model.

Personal Projects

May 2020 – June 2020 Built an educational [Epidemic Simulator](#) based on the SIRD model of infection spread. The project was aimed at making people aware of benefits of social distancing, proper sanitization, better quarantine centers and demonstrate risks of pandemics on older population of the society.

April 2020 – May 2020 Implemented a version of Craig Reynold's famous [Boid algorithm](#) with quadtree optimization and peripheral vision features.

Teaching Experience

Sept - Dec 2023 **BIOL-347 Animal Behavior Lab**

- Teaching Assistant for the undergraduate Animal Behavior Lab at UMass Boston, Fall 2023.

Workshops, Conference talks & Presentations

August 2023 Participant of the Gordon Research Conference (GRC) on Collective Behavior, Newry, Maine

March 2022 Poster presentation at the Interactions Symposium organized by Dept. of Chemistry IISER Bhopal.
Poster Title: *Deep Learning methods for accurate detection and tracking for behavioral studies in C. elegans*

Dec 2021 Participant of the ICTP-ICTS Winter School on Quantitative Systems Biology

Dec 2019 Poster presentation at the Indian Rheological Society 13th International Conference on Complex Fluids and Soft Matter (CompFlu 2019).
Poster Title: *Analyzing effects of Extrinsic Noise on mRNA translation*

Publications

1. **Deep-Worm-Tracker: Deep Learning Methods for Accurate Detection and Tracking for Behavioral Studies in *C. elegans***
Shoubhik Chandan Banerjee, Khursheed Ahmad Khan, and Rati Sharma
Applied Animal Behaviour Science 2023
DOI: [10.1016/j.applanim.2023.106024](https://doi.org/10.1016/j.applanim.2023.106024)
2. **Persistent Correlation in Cellular Noise Determines Longevity of Viral Infections**
Abhilasha Batra, Shoubhik Chandan Banerjee, and Rati Sharma
The Journal of Physical Chemistry Letters 2022
DOI: [10.1021/acs.jpcclett.2c01875](https://doi.org/10.1021/acs.jpcclett.2c01875)

Computational Skills

o **Programming Languages**

R, Python, C, p5.js

Public Outreach & Volunteer Work

Nov 2023- May 2024 **Sci-Pie Committee UMass Boston**

- Organizing committee member of the Environmental Biology (EB) grad student led forum for discussing scientific research and problems in Ecology and Evolutionary Biology.

2020 **Counseling Cell IISERB**

Peer Counselor

- Volunteered to help students with academic, emotional, and behavioral problems as a peer counselor.

2019 **Student Development Council IISERB**

Student Mentor

- Enrolled in guiding freshmen under the 'Friends of Freshers (FOF)' team.

2019 **Model United Nations (MUN) IISERB**

Student Volunteer

- Monitored the smooth flow of events for the MUN conference as a student volunteer.

2018 **Vijyoshi (National Science Camp)**

- Participant of the prestigious Vijyoshi (National Science Camp) organized jointly by KVPY, INSPIRE & IISERB.