

Amlan Nayak

Graduate Student in Computational Biology
Cornell University

Email:nayak.amlan69@gmail.com

LinkedIn:amlannayak20

Github:amlan-nayak

EDUCATION

- **Cornell University** Ithaca, NY, U.S.A
PhD Student August 2023 - Present
- **IISER Mohali** Mohali, India
BS-MS Dual Degree in Physics with Data Science Minor, CPI: 9/10 August 2018 - May 2023

RESEARCH EXPERIENCE

- **Studying Collective Decision Making in Fish Schools** Sept 2023 - Present
PhD Thesis, Cornell University, Ithaca Guide: Dr. Andrew Hein
 - **Project:** Using three photon laser to impair escape response neurons in zebrafish, and forming groups to study collective decision making through real time tracking and visual field reconstruction using computer vision techniques.
- **Studying Collective Behavioural Dynamics of Meerkat Groups** May 2022 - April 2023
Master's Thesis, Max Planck Institute of Animal Behaviour, Konstanz Guide: Dr. Ariana Peshkin
 - **Project:** Using GPS and Accelerometer data collected by the Kalahari Meerkat Project to build Machine Learning models to classify behavioral states and study the collective behavioural dynamics and decision making in Meerkats.
- **Study of Lévy walks in fish schools** May 2021 - July 2021
Research Internship, IISc Bangalore, India Guide: Dr. Vishwesha Guttal
 - **Project:** Tracked the collective behaviour in model system of fish (*Etrplus suratensis*) and using data analysis techniques to prove the probability distribution for various physical interactions in the shoal is levy distributed and obeys a truncated power law.
- **Study of Onset of Collective and Cohesive Motion** May 2020 - July 2020
Research Internship, IISER Mohali, India Guide: Dr. Abhishek Chaudhari
 - **Project:** Modelled groups of self-propelled particles to show phase transitions from non polar to polar state are discontinuous and investigated the role of noise in the transitions. Also studied the collective motion, with and without cohesion, of the particles.

PUBLICATIONS

- P. Minasandra, E.M. Grout, K. Brock, M.C. Crofoot, V. Demartsev, A.S. Gersick, B.T. Hirsch, K.E. Holekamp, L. Johnson-Ulrich, A. Nayak, J. Ortega, M.A. Roch, E.D. Strauss, A. Strandburg-Peshkin, **Behavioral sequences across multiple animal species in the wild share common structural features**, PNAS. (2024, In Review)

SKILLS SUMMARY

- **Languages/Tools:** Python, Julia, R, Mathematica, L^AT_EX, Git.
- **Computational:** Data Analysis & Machine Learning using Scipy, Numpy, Matplotlib, Seaborn, Scikit and TensorFlow.

AWARDS & CONFERENCES

- Awarded the **Cornell Fellowship** for first two semesters to start research work.
- Awarded the **Academic Merit Award by IISER Mohali** for excellent academic performance in 8th Semester of undergraduate studies.
- Awarded the **INSPIRE Scholarship by the Department of Science and Technology(DST)**, Government of India for 2018-2023.
- Awarded the **National Talent Search Examination (NTSE) scholarship** by NCERT, Government of India in 2016.
- Awarded the **Undergraduate Research Opportunities Grant by Max Planck School - Matter to Life** (2021).

VOLUNTEER EXPERIENCE

- EYH - A conference for 7th-10th graders with underrepresentation in STEM. Ithaca, USA
Engaged in volunteering fostering awareness of opportunities in STEM related careers
- Prayatna - An Organisation formed by IISER Mohali students. Mohali, India
Engaged in teaching of underprivileged students & clothes donation drive
- Visonaries Group - An Initiative to help visually impaired students. India
Engaged in recording essays, editing, summarizing assignments for students in need
- Mental Health Support Group - An Initiative to help IISER-M students. Mohali, India
Engaged in organizing awareness talks, conducting surveys, helping students in need

EXTRA CURRICULARS

- Active member of Cornell Swing Graduate Club.
- Former Junior Editor at Manthan, a IISER-M student-led science communication magazine initiative.
- Former member of Darpan, the theatre club of IISER Mohali. Represented IISER Mohali in competitive events and won awards.
- Former member of Brighter Lamp, the Quizzing Club of IISER Mohali. Represented IISER Mohali in competitive events and won awards.
- Former Editor at Inventa, collaborative science magazine and science communication initiative developed by students pursuing pure science degrees across ten national institutes of science in India.
- Former creative content writer for the football website “The Nutmeg Assist”.

REFERENCES

- Dr. Andrew M. Hein, Assistant Professor Email: amh433@cornell.edu
Dept. of Computational Biology, Cornell University, USA
- Dr. Abhishek Chaudhari, Associate Professor Email: abhishek@iisermohali.ac.in
Dept. of Physical Sciences, IISER Mohali, India
- Dr. Ariana Strandburg-Peshkin, Group Leader Email: astrandburg@ab.mpg.de
Max Planck Institute of Animal Behaviour, Germany