Amlan Nayak

Graduate Student in Computational Biology
Cornell University

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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 Individual and Collective Predator Evasion in Fish Schools** — Sept 2023 - Present
  PhD Thesis, Cornell University, Ithaca — *Guide: Dr. Andrew Hein*
  - **Project**: Using real time tracking, computational modelling, visual field reconstruction using computer vision to study collective escape behavior and decision making in fishes.
- **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 (Etroplus 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 discontinous and investigated the role of noise in the transitions. Also studied the collective motion, with and without cohesion, of the particles.

Publications

- *L. Kong, L. Gallart, A.G. Grassick, J.W. Love,* ***A. Nayak****, and A.M. Hein,* ***A brief natural history of misinformation****, J. R. Soc. Interface* (2025, In Review)
- *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)

Conferences

- Nayak, A. (2025, April). Unraveling Predator Evasion Mechanisms With Zebrafish. Oral presentation at the 7th CNY Fish Meeting, Syracuse, NY, USA
- Nayak, A. (2025, March). Unraveling Predator Evasion Mechanisms: Interactive Experiments With Zebrafish. Oral presentation at the APS Global Physics Summit, Anaheim, CA, USA

Awards

- Cornell Conference Travel Grant to attend APS Global Physics Summit (2025)
- Cornell Fellowship for first two semesters to start research work (2023) .
- Academic Merit Award by IISER Mohali for excellent academic performance in 8th Semester of undergraduate studies (2022).
- INSPIRE Scholarship by the Department of Science and Technology(DST), Government of India for 2018-2023.
- National Talent Search Examination (NTSE) scholarship by NCERT, Government of India (2016).
- Undergraduate Research Opportunities Grant by Max Planck School - Matter to Life (2021).

Teaching Experience

- **BIOCB 3620/6620** : Assisted the lead instructor in lesson creation & delivery, and student supervision. Also provided academic support to individuals and small groups with a positive learning environment, and supported inclusive education.

Volunteer Experience

- EYH - A conference for 7th-10th graders with underrepresention 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

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