

Shaurya Goyal

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Education

Indian Institute of Technology (IIT), Kharagpur

2020 - 2025

BS-MS in Economics Minors : Math, Biology, Artificial Intelligence

CGPA: 8.8

Grade 12 (HSC): 92% Grade 10 (ICSE): 95%

Awards and Scholarships

IIT Kharagpur Foundation Research Fellowship	2022
Selected for the inStem workshop on Stem Cell research and received funding	2022
Top 10% grade across students in the department at the end of 3rd semester	2021
Selected for the ICTP-ICTS graduate-level Winter School in Quantitative Systems Biology	2021
Top 10% grade across all students in the institute at the end of 1st year & department change	2021
IIT Kharagpur MCM Scholarship	2020-2022

Research Experience

Indian Institute of Science (IISc), Bangalore

November 2021 – Ongoing

Cancer Systems Biology — Prof Mohit Kumar Jolly

Remote

- Used machine learning and gene expression data to model the effect of ELF3 and GRHL2 on epithelial(E)-mesenchymal(M) transition as a result of their network topology. **Paper in draft.**
- Modelled the effect of E/M plasticity on Tamoxifen resistance by ER+ breast cancer cells. **Paper in draft.**
- Investigating the effect of phenotype plasticity on immune evasion by ER+ breast cancer cells

IIT Kharagpur

April 2021 – April 2022

Evolution of Eukaryotes — Prof Riddhiman Dhar

Remote

- Conducting a phylogenetic analysis of proteomes to understand whether an inside-out or outside-in model of eukaryote cell evolution was favourable

IIT Kharagpur

July – October 2021

Graph Fourier Transform — Prof Sanand Athalye

Remote

- Suggested a faster implementation for the parallel approximate graph fourier transform
- Compared running time of single and parallel approximate graph fourier transform for small graph networks
- Theoretical analysis for a faster exact graph fourier transform by Haar unit and Givens rotation factoring of graph laplacian eigenspace and reconstructing the graph network

Selected Projects

Reinforcement Learning to Play Pong

October 2021

- Built a reinforcement learning agent that uses deep Q-learning and learns from pixel data to play Pong

Conditional GANs (Guided Reading Project)

July - August 2021

- Conducted a literature review on the theory of cGAN models in recent papers with an emphasis on face generation and other imaging purposes

Modelling Global Warming

February 2021

- Used machine learning to model how the temperatures have changed and used it to predict future changes

Relevant Coursework

Systems Biology³, Machine Learning in Genomics², Cancer Biology³, Molecular and Cell Biology, Econometrics (with lab), Reinforcement Learning¹, Probability, Statistics, Numerical Analysis, Partial Differential Equations, Linear Programming

¹ Stanford, ² MIT-OCW ³ Master's/PhD level course

Programming Skills

Python, MATLAB, PyTorch, Linux/Windows, High Performance Computing, C

Workshops / Conferences Attended

Sensorimotor Control Winter School in Quantitative Systems Biology organized by ICTP-ICTS	6-17 December 2021 Online
Neuromatch 4.0 Conference	1-2 December 2021 Online
High Performance Computing and AI for Computational Biology Workshop organized by IIT Kharagpur and Tezpur University	29-30 October 2021 Online

Volunteer Work

Academic Mentor UG Council, IIT Kharagpur <ul style="list-style-type: none">Mentoring 6 students in their 1st year to ensure they have a smooth integration to online university life and assisting with academic and non-academic matters	Jan 2022 – Ongoing
Teacher(Independent) <ul style="list-style-type: none">Taught 2 under privileged kids in my locality of grade 5 (to grade 6) math, science and english.Led to improved understanding and skill and their grade also improved by nearly 20 percent.	October 2019 – December 2020

Leadership / Extracurricular

- Active member of Biotechnology Reading Group, IIT Kharagpur
- Represented institute at various national level debate tournaments as a member of the Debating Society, IIT Kharagpur
- Represented institute in the Inter-IIT Scrabble Tournament
- Selected as Times Scholar (2019) by Times of India Group from 300,000+ students across India
- Silver Medal in National Taekwondo Championship (2017) and 1st Dan Black Belt

Other Interests: Guitar, Piano, Trekking (reached 13120 ft), Running, Rock music, Star Wars