

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: 8.89 Rank: 2/62

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

Awards and Scholarships

NGSF Summer Research Intern, Next Gen Scientists Foundation

2022

International Research Fellowship, IIT Kharagpur Foundation [declined due to visa issues]

2022

Selected for the graduate-level inStem workshop on Stem Cell research [funded]

2022

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

Merit-Cum-Means Scholarship, IIT Kharagpur [full tuition + stipend]

2020-Ongoing

Research Experience

Indian Institute of Science (IISc), Bangalore

November 2021 – Ongoing

Cancer Systems Biology — Prof Mohit Kumar Jolly

- Used machine learning and gene expression data to model the effect of ELF3 on epithelial-mesenchymal plasticity and the resulting drug resistance and immune evasion by ER+ breast cancer. **Paper in draft.**

IIT Kharagpur

April 2021 – April 2022

Evolution of Eukaryotes — Prof Riddhiman Dhar

- 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

- 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

Neuroscience Mini-Projects

March - May 2022

- Analyzed epilepsy - normal EEG data, Analyzed tuning curve of visual neurons, Estimated the auditory spectro-temporal receptive field by spike triggered averaging, Simulated a leaky integrate and fire neuron

Do bike lanes increase bike commuter rates ?

March-April 2022

- Used two-stage multivariate regression and error testing to find the impact of bike lanes

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

Computational Neuroscience², Numerical Analysis, Statistics, Systems Biology³, Machine Learning in Genomics², Cancer Biology³, Molecular and Cell Biology, Econometrics (with lab), Reinforcement Learning¹, Probability, Partial Differential Equations, Linear Programming ¹ Stanford, ² MIT-OCW ³ PhD level course

Skills

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

Wet Lab (Beginner): (iPSC) Cell Culturing, RNA Isolation, RT-PCR

Workshops / Conferences Attended

Essential Stem Cell Lab Techniques

16-20 May 2022

Workshop organized by inStem and NCBS

Bangalore, India

Sensorimotor Control

6-17 December 2021

Winter School in Quantitative Systems Biology organized by ICTP-ICTS

Online

Neuromatch 4.0

1-2 December 2021

Conference

Online

High Performance Computing and AI for Computational Biology

29-30 October 2021

Workshop organized by IIT Kharagpur and Tezpur University

Online

Volunteer Work

Academic Mentor

Jan 2022 – Ongoing

UG Council, IIT Kharagpur

- 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

Teacher(Independent)

October 2019 – December 2020

- 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.

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