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 [stipend] 2022
International Research Fellowship, IIT Kharagpur Foundation [stipend, declined due to visa issues] 2022
Selected for the 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

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 Neuroscience[2], Numerical Analysis, Statistics, Systems Biology[3], Machine Learning in Genomics[2],Cancer Biology[3], Molecular and Cell Biology, Econometrics (with lab), Reinforcement Learning[1], Probability, Partial Differential Equations, Linear Programming [1] *Stanford,* [2] *MIT-OCW* [3] *PhD level course*

Programming Skills

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

Workshops / Conferences Attended

Essential Stem Cell Lab Techniques **16-20 May 2022s**
Workshop organized by inStem andsd 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 institue 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