

Shaurya Goyal

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Education

Indian Institute of Technology (IIT), Kharagpur

2020 - Ongoing

BS - MS in Economics

CGPA: 8.74

Minor: Mathematics and Computing

Micro-Specializations: Optimization Theory, Artificial Intelligence

Grade 12 (HSC), score: 92%

2020

Grade 10 (ICSE), score: 95%

2017

Research Experience

Indian Institute of Science (IISc), Bangalore

November 2021 – Ongoing

Cancer Systems Biology — Prof. Mohit Kumar Jolly

- Working with gene expression data using computational and statistical methods to uncover details about epithelial-mesenchymal transition
- Conducted analysis for NAFLD, NFATc, KLF4 and SLUG circuits

IIT Kharagpur

April 2021 – Ongoing

Evolution of Eukaryotes — Prof. Riddhiman Dhar

On Hold

- Conducting a phylogenetic analysis of cells using genomic data to understand whether an inside-out or outside-in model is favourable and to understand how mitochondria originated in eukaryotic cells
- Sampled proteomes from orthologous groups of LUCA using python, used MUSCLE for multiple alignment and generated maximum likelihood phylogenetic trees using MEGA

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
- Conducted a 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 and presented it weekly.
- Looked briefly at dynamical systems and stochastic approaches to GANs

Modelling Global Warming

June 2021

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

Robot Simulation

May 2021

- Simulated a system of floor cleaning vacuum robots in a room with obstacles

Technical Skills

Programming: Python, MATLAB, C, \LaTeX

Libraries: NumPy, PyTorch TensorFlow, OpenAI Gym, SciPy

Selected Coursework

Machine Learning in Genomics², Linear Programming, Probability & Statistics, Numerical Analysis, Algorithms², Reinforcement Learning¹, Deep Learning³, Partial Differential Equations, Psychology, Discrete Maths², Ordinary Differential Equations ¹ *Stanford*, ² *MIT-OCW*, ³ *CMU*

Workshops Attended/Selected For

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

Volunteer Work

Teacher(Independent)	October 2019 – December 2020
<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.	

Leadership / Extracurricular

- Active member of Biotechnology Reading group at IIT Kharagpur
- Represented institute at various national level debate tournaments as a member of the Debating Society, IIT Kharagpur
- Selected as Times Scholar 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, Hiking, Running, Reading, Rock music, Star Wars