

Shaurya Goyal

Email : shaurya@kgpian.iitkgp.ac.in

Mobile : +91 8454869021

Website: shauryagoyall.github.io

Education

Indian Institute of Technology, 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

Evolution of Eukaryotes

April 2021 – Ongoing

IIT Kharagpur — Prof. Riddhiman Dhar

- 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

Graph Fourier Transform

July – October 2021

IIT Kharagpur — 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

Ongoing

- Building 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

- Did a directed reading on the theory of cGAN models in recent papers with an emphasis on face generation and other imaging purposes and presented it weekly.
- Also 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

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

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

- 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