Shaurya Goyal

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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**

Honors and Awards

IIT Kharagpur Merit-Cum-Means Scholarship 2020-21
Times Scholar by Times of India Group 2020

Experience

IIT Kharagpur **April 2021 – Ongoing**
Evolution of Eukaryotes

- Conducting a phylogenetic analysis of cells using genomic data to understand whether an inisde-out or outside-in model is favourable and to understand how mitchondria originated in eukaryotic cells
- Sampled proteomes from ortholgous 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

- 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 ands stochastic approches 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 Genomics[2], Linear Programming, Probability & Statistics, Numerical Analysis, Algorithms[2], Reinforcement Learning[1], Deep Learning[3], Partial Differential Equations, Psychology, Discrete Maths[2], Ordinary Differential Equations

[1] *Stanford,* [2] *MIT-OCW,* [3] *CMU*

Workshops Attended

High Performance Computing and AI for Computational Biology **29-30 October 2021**
Workshop organized by IIT Kharagpur and Tezpur University Online

Leadership / Extracurricular

- Active member of Biotechnology Reading group at IIT Kharagpur
- Represented institue at various national level debate tournaments as a member of the Debating Society, IIT Kharagpur
- Silver Medal in National Taekwondo Championship (2017) and 1st Dan Black Belt

Other Interests: Guitar, Hiking, Running, Reading, Rock music, Star Wars