SHAURYA GOYAL

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Education

Indian Institute of Technology, Kharagpur   **2020 – Ongoing**
Integrated Master of Science in Economics   *CGPA: 8.74*

Minor in Mathematics and Computing (Ongoing)
Micro - Specializations in Optimization Theory (Ongoing) and Artificial Intelligence (Ongoing)

Grade 12 (HSC), score: 92%   **2020**
Grade 10 (ICSE), score: 95%   **2017**

Research Experience

IIT Kharagpur   **July 2021 – Ongoing**
Undergraduate Student Researcher   *Graph Signal Processing*

- Developing faster, more numerically stable and accurate algorithms for graph fourier transform and graph principal component analysis
- Suggested faster implementations for the approximate graph fourier transform

IIT Kharagpur   **April 2021 – Ongoing**
Undergraduate Student Researcher   *Evolutionary Biology*

- 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 MAFFT for multiple alignment, removed spurious/poor hits using trimAl and generated maximum likelihood phylogenetic trees using FastTree

Projects

ReinBros: Reinforcement Learning to Play Mario   **Ongoing**

- Building a deep reinforcement learning agent that uses double deep Q learning and learns from pixel data to play Super Mario Bros

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 multi-agent system of 2 floor cleaning robots in a room with obstacles

Selected Relevant Coursework

Monte Carlo Methods (PG), Reinforcement Learning[1], Machine Learning in Genomics[2], Deep Learning[3], Algorithms[2], Linear Programming, Probability & Statistics, Partial Differential Equations, Psychology, Numerical analysis, Discrete Maths[2], Ordinary Differential Equations   [1] *Stanford Online,* [2] *MIT-OCW,* [3] *CMU*

Technical Skills

Programming: Python, MATLAB, C
Other: LaTeX, HTML, CSS, Autocad, MS-Office

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

- Currently involved with co-founding a Neurotech student research group at IIT, Kharagpur
- Active member of Biotechnology Reading group and Debating Society, IIT Kharagpur
- Selected as Times Scholar 2020 by Times of India Group and awarded a scholarship (Declined)
- Silver Medal in National Taekwondo Championship (2017) and 1st Dan Black Belt
  Other Interests: Guitar, Hiking, Running, Reading, Rock music, Star Wars