

EDUCATION

- **Indian Institute of Technology (IIT) Patna** Patna, India
Bachelor of Science in Mathematics and Computing; CPI: 8.49 on 10.0 2021 – 2025 (Expected)
- **Amity International School, Mayur Vihar** New Delhi, India
Class 12th- CBSE Board; 96% 2019-2021

PROJECTS AND EXPERIENCE

- **Computer Systems Group, I.I.I.T Hyderabad**
Research Intern December 2022-Present
 - Worked under the guidance of **Dr. Tejas Bodas**, Assistant Professor at Computer Systems Group, IIIT Hyderabad on **RL based learning of indexable policies for Multi Armed Bandits (MABs)** and their applications in **Scheduling**.
 - Conducted a literature review of existing indexable policies (Whittle's and Gittins' Index) for MABs as well as its application in **Queuing Theory**.
 - **Proposed a novel algorithm** for estimating Gittins' indices for MABs using Q-learning and Stochastic Approximation, **outperforming existing state-of-the-art-algorithms**.
 - Work is being documented for publication, with me being the **first author**.
 - Skills and Frameworks: **Reinforcement Learning, Stochastic Approximation, Deep-RL, Queuing theory, Scheduling, Gittins' index, PPO, SAC, Machine Learning**.
- **Advanced Lab, CSE dept, I.I.T Patna**
Undergraduate Researcher July 2023-Present
 - Worked under the guidance of **Prof. Rajiv Misra**, Professor and HOD of CSE department at IIT Patna, on **CO2 forecasting using Deep Learning** techniques.
 - Conducted a literature review of CO2 emission of SAARC countries, existing DL algorithms like **LSTM, CNN-LSTM, LSTM with attention, etc**.
 - Solely worked in multi-variate time series data analysis and preprocessing using Statistical methods like **FMOLS**, etc.
 - Worked in implementing DL methods like LSTMs, CNN-LSTMs, etc for forecasting.
 - Work is being reviewed for publication at **IEEE BigData 2023**.
 - Currently working in implementation of **Deep-RL algorithms** like DQNs, DDPG for optimal routing of EVs.
 - Skills and Frameworks: **Deep Learning, Data Science, Statistics, LSTMs, Attention, Deep-RL**.
- **Smart India Hackathon**
Project May 2022-August 2022
 - Worked on designing **an NLP based model** to predict career paths for individuals using their resume.
 - This was integrated on the Django framework using PostgreSQL, proposing an end-to-end product.
 - **Runner up in our Problem Statement** among **30,000 competing teams**.
 - **Code:** <https://github.com/Harshit2807161/SIH-2022-DR710-PROSOL>.
 - Skills and Frameworks: **NLP, Machine Learning, Data Science, Python and its modules, Pytorch**.

TECHNICAL SKILLS

- **Most experienced with:** C, C++, Linux OS, Python, Python libraries, Statistics, PyTorch, LaTeX, Open-AI gym, Queuing theory, Reinforcement Learning and Deep-RL: (DQN, DDQN, Policy based methods, etc), Assembly language, VERILOG, Arduino programming, MATLAB and Octave.
- **Some experience with:** HTML, CSS, Git and GitHub.

COURSEWORK

Mathematics-I and II, **Data Science**, **Programming and Data Structures**, Algorithms, Real Analysis, Differential Equations, Discrete Mathematics, **Probability theory and random processes**, Numerical Linear Algebra, Computational lab, Computer Architecture, **Optimisation techniques**, Theory of Computation.

ACHIEVEMENTS

- **Inter IIT Tech Meet, 2023- Silver Medalist:** Our team **represented IIT Patna against all the 23 participating IITs** at the 11th Inter IIT Technical Meet. Worked on building and deploying a **Bayesian network** to predict the **sustainability** score of various corporates through a dedicated modeller.
- **Inter IIT Tech Meet, 2023- Participant:** Worked on a pipeline model to extract vitals of patients from monitor images using **OpenCV, YOLO, InceptionV3, Transfer Learning and OCR**.
- **Sudo Override, 2022- 2nd position: CTF competition** under Celesta. Used Steganography, deciphering techniques and various Linux modules in Kali Linux and Ubuntu.
- **JEE Advanced:** Secured an **All India Rank of 4497** out of 160,000+ candidates who appeared for JEE Advanced, 2021.
- **JEE Mains:** Secured **99.57 percentile** of the 1 million + candidates who appeared for JEE Mains, 2021.

POSITION OF RESPONSIBILITIES

- **TEDxIIT Patna**
Organiser *April 2023 - Present*
Leading a team of 50 people to organise the fifth edition of TEDxIIT Patna.
- **NJACK-ML- Machine learning society, IIT Patna**
Sub-coordinator *October 2022 - June 2023*
Involved in various group projects and worked to improve the ML culture at IIT Patna.
- **Celesta- Annual Techno-Management Fest, IIT Patna**
Sub-coordinator: Sponsorship *September 2022 - January 2023*
My work included reaching out to MnCs across India, creating networks and pitching for sponsorships.
- **Forthright- Media Body, IIT Patna**
Senior Content Correspondent *April 2022 - July 2023*
Worked in curation, drafting and editing of various articles.