Gautam Sharma

Roll Number: 210101042
B.Tech. - Computer Science and Engineering
Minor in Data Science and Artificial Intelligence
Indian Institute Of Technology, Guwahati

+91-8595312271
gautam.sharma@iitg.ac.in
gautam.sharma.iitg@gmail.com
Website | g-s01.github.io
 github.com/g-s01 | linkedin.com/in/g-s01/

EDUCATION

Degree/Certificate	Institute/Board	CGPA/Percentage	Year
B.Tech. Major	Indian Institute of Technology, Guwahati	8.73 (Current)	2021 - Present
B.Tech. Minor	Indian Institute of Technology, Guwahati	7.00 (Current)	2022 - Present
Senior Secondary	CBSE Board	95.20%	2021
Secondary	CBSE Board	95.80%	2019

PROJECTS

Quantum Powered Business Rule Engine ⛁ *Dec 2023*
*Group Project, **Gold Medal, 12th Inter IIT Tech Meet**, IIT Madras* bit.ly/3tCRDCf
- Built a business rule engine using **Quantum Computing**, employing DWave's **dwave-system** which makes the process of re-accommodating passengers affected by flight delays/cancellation **easier and faster over classical methods**.
- Solved the famous **Passenger Recovery Problem** by formulating a mixed integer programme.
- For preprocessing, used **Prune and Search**, and **Multithreading**. Used **Dynamic Programming** to speed up the process.
- Solved the problem classically using **gurobipy**, and as a **CQM**, and **BQM** using **Quantum Annealing**.
- For post-processing, used **Flow Network Algorithms**, and displayed all the solutions using **Streamlit**.

DDoc: Blockchain-based secure document ecosystem ⌾ *Jan - Feb 2024*
Group Project, Kriti 2024, IIT Guwahati bit.ly/3SHtfYL
- Created a **decentralized ecosystem** to **issue**, **receive** and **verify** documents for organizations and individuals.
- Used **digital signatures** to prevent tampering of documents, and also implemented **Proof of Existence** for the documents.
- Used **Solidity**, and **Truffle** to deploy the smart contract on **Sepolia TestNet**, hosted APIs through **Python**, developed frontend using **Flutter**, used **IPFS** for **decentralized storage** and also made a **custom trained** chatbot to support the application.

Investigating use of LLMs in verification of hardware design ⛁ *Nov 2023*
Group Project, Guide: Dr. Chandan Karfa bit.ly/3O5bIbC
- Tested the capabilities of GPT-4 in **generating independent assertions** about a hardware design from Google's OpenTitan.
- Generated the assertions in **SVA** by giving verbal prompts and tested their validity in **EDA playground**.
- Found out a bug in Open Titan's implementation of ROM Control, devised methods to prompt engineer for the above tasks.

Competitive Programming Helper Discord Bot ⌾ *Dec 2022*
Group Project, Coding Club, IIT Guwahati bit.ly/3XBsRgl
- Built a discord bot using **discord.py** which makes the process of planning CP practice effortless for a user.
- Incorporated features such as: problem recommendation, track of rating changes, host duel between users, contest reminders, record all problems solved by a user, leaderboard, graphical statistics, support for Codeforces and AtCoder.
- Used **Firebase** for storing user data, **Beautiful Soup** for web-scraping, and **Codeforces**, **Clist**, etc. API for API calls.

ACHIEVEMENTS

ICPC Mathura Prelims 2023: Achieved **AIR 163** (**6th in IIT Guwahati**, all batches combined) among 1000+ teams.
Codeforces: Achieved maximum rating of **1672 (Expert)** (Handle: *g-s01)*
- Codeforces Round 881: Secured **Global Rank 90** among 28,000+ participants.

AtCoder: Achieved maximum rating of **1102 (5 Kyu)** (Handle: *vimruLover*)
- AtCoder Beginner Contest 308: Secured **Global Rank 634** among 10,000+ participants.

12th Inter IIT Tech Meet: Secured **Rank 1** among 100+ students from **20 IITs** in the **Quantum Computing Challenge**.
APAC Terminal 2023: Secured **Rank 4** at **Asia-Pacific Terminal** by **Citadel Securities** and **Correlation One**.
Amazon ML Summer School 2023: Selected to attend various AI/ML lectures by Amazon from students all over India.
ICPC-de-Tryst-2023: Secured **Rank 1** at ICPC-de-Tryst event held at IIT Delhi.
Abstractify-2023: Secured **Rank 3** among participants from top 8 IITs in the Quant Winter Trading School, IIT Delhi.
JEE Advanced 2021: Secured **AIR 530** among 0.15 million students across the country.
JEE Mains 2021: Secured **AIR 359** among 0.94 million students across the country.
KVPY SX 2021: Secured **AIR 397** and the KVPY scholarship given to **top 2000** students across the country.
JSTSE 2018: Secured **Rank 17 (out of 19,331)** and the JSTSE (now MVPP) scholarship given to **top 160** students in Delhi.

TECHNICAL SKILLS

- **Programming**: C, C++, Solidity, Java, Python*, JavaScript*
- **Quantum Computing**: Qiskit, DWave
- **Miscellaneous**: LaTeX, Figma, Markdown, Bash*
- **Database Management**: SQL
- **Optimization frameworks**: Gurobi, OR Tools

KEY COURSES TAKEN

- **Computer Science**: Data Structures & Algorithms, Machine Learning, Formal Methods for System Verification, Computer Architecture & Organization, Database Management Systems, Computer Networks, Operating Systems
- **Mathematics**: Linear Algebra, Number Theory, Probability & Random Processes, Discrete Mathematics

Positions of Responsibility

- **Coding Club, IIT Guwahati**
  - **Competitive Programming Head** *(2023-24)*: Organized **India's first Inter College Camp for ICPC**, with a partnership with 13 colleges, to deliver quality lectures and contests to **6,000** students. Conducted contests to help everyone prepare for job interviews.
  - **Coordinator** *(2022-23)*: Created a course on fundamentals of **C++**, from **multithreading**, **streams**, **OOP** etc.