



Sonu Kumar Shaw

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Bachelor of Technology

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EDUCATION

Degree/Certificate	Institute/Board	Year
B.Tech. Major	Indian Institute of Technology, Guwahati	2020 - 24
Senior Secondary	Central Board of Secondary Education	2020
Secondary	Indian Certificate of Secondary Education	2018

PROJECTS

• TF-IDF based Problem Search Engine

Aug. '23

Personal Project

Website | Github

- Implemented web scraping using Selenium and BeautifulSoup to extract problem sets from *LeetCode* and *CSES*.
- Implemented **TF-IDF** algorithm from **scratch**, calculating **TFIDF score** for every word in each problem statement.
- Implemented **Cosine similarity** to rank problems in alignment with search queries, ensuring optimal relevance.
- Developed a **Node.js** application that accepts user queries and displays relevant problems via **EJS** templating.

• Rubik's Cube Solver - using Korf's IDA* Algorithm

Aug. '23 - Sep. '23

Personal Project

Korf's Research Paper | Github

- Modelled a virtual **Rubik's Cube (3x3)** in 3 different models/classes using standard data structures present in C++.
- Achieved solving a Rubik's Cube 8 times jumbled in **under 3 seconds** using **BFS, DFS, and IDDFS** algorithms.
- Implemented the **Korf's IDA*** Algorithm, achieving a solving time of **under 10 seconds** for a Rubik's Cube jumbled **13** times.

• Predicting Flight Delays in India

Jul. '23

Personal Project

Github

- Developed a **Flight Delay** prediction system, aimed at **improving** customer satisfaction and air-travel management.
- Data was **scraped** from *Flightradar24*, the test **MSE** was obtained to be **0.25** with **SVM** and **Random Forests**.

• BigInteger

Feb. '23

Personal Project

Github

- Created a lightweight **arbitrary-sized integer** class for C++ using **OOPs** concepts and **no additional dependencies** apart from the standard C++ library.
- Supports all arithmetic, relational, assignment and input/output operations.

• Crack Area Prediction of RC Slab under Blast Loading

Jul. '23 - Present

Prof. Hrishikesh Sharma, Department of Civil Engineering, IIT Guwahati

- Studied several research publications to validate reinforced concrete slab models in **LS-DYNA**.
- Developing a Deep Neural Network (DNN) to forecast crack area, utilizing multiple input parameters, including percentage reinforcement, slab dimensions, blast load, and blast height.

ACHIEVEMENTS

- Expert on Codeforces:** Achieved a peak rating of **1636** on the platform (Handle - *shawsk*).
 - Codeforces Round #896: Ranked **407th globally** among **26000+** participants.
 - Codeforces Round #889: Ranked **429th globally** among **26000+** participants.
 - Codeforces Round #886: Ranked **603rd globally** among **38000+** participants.
- Flipkart Grid 5.0:** Advanced to semi-final round by securing a rank in **top 1.25%** among **4 lakh** candidates.
- Solved **1000+ programming problems** on all coding platforms combined.
- Joint Entrance Examination '20:** Secured a rank in **top 1%** among **1.17 million** candidates.
- Young Scientist Talent Test '18:** Among **top 10** students in state.

TECHNICAL SKILLS

Programming languages: C/C++, Python*

Database Management: MySQL

Web Technologies: HTML, CSS, Node.js, React*

Miscellaneous: NumPy*, Git

* Elementary proficiency

KEY COURSES TAKEN

- Computer Science:** Introduction to Computing, Data Structures and Algorithms, Database Management System and SQL, Operating Systems.
- Mathematics:** Probability, Discrete Mathematics, Linear Algebra, Number Theory and Algebra.

POSITIONS OF RESPONSIBILITY

- Manager, Udgam 2022, IIT Guwahati** Sep. '21 - Feb. '22
 - Headed** a team of **12 associates** in organising a highly successful Internfair with **1300+** student registrations.
- Senior Executive, E-Cell, IIT Guwahati** Apr. '21 - Apr. '22
 - Organised** a diverse range of **entrepreneurial events** with a focus on effective moderation and engagement.

EXTRACURRICULAR

- Yuvaan - IITG Mars Rover (Robotics Club):** Contributed to autonomous task under AI module 2022
- Techevince '22:** Devised a solution to address campus's laundry challenges, along with a revenue model. 2022
- Startup Case Study, E-Cell:** Conducted an in-depth case study on the startup 'Travel Triangle'. 2021