



Sonu Kumar Shaw

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B.Tech - Civil Engineering

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Github | Website | Codeforces

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EDUCATION

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

PROJECTS

• TF-IDF based Problem Search Engine

Personal Project

Aug. '23
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

Personal Project

Aug. '23 - Sep. '23
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**.

• IITG StackOverflow

Personal Project

Jul. '23 - Aug. '23
Website | Github

- Built a **dynamic Q/A platform** with features including user authentication, post creation and deletion, voting, user profile management and profile viewing. Designed it as per **MVC architecture**.
- Developed backend **RESTful API** using **Node.js/Express** framework and **MongoDB** as database.
- Implemented authentication using **JWT**, ensuring only authenticated users can create posts and vote.
- Developed the frontend using **React** and used **Redux** for efficient state management of the app.

• Crack Area Prediction of RC Slab under Blast Loading

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

Jul. '23 - Present

- 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.

TECHNICAL SKILLS

Programming languages: C/C++, JavaScript*

Database Management: MySQL, MongoDB*

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

Miscellaneous: Git, NumPy*

KEY COURSES TAKEN

- Computer Science:** Introduction to Computing, Data Structures and Algorithms, Database Management System and SQL, Operating Systems.
- Mathematics:** Linear Algebra, Real and Complex Analysis, Multivariable Calculus.

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.

POSITIONS OF RESPONSIBILITY

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

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