

# Sonu Kumar Shaw

Bachelor of Technology  
Indian Institute of Technology, Guwahati

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## EDUCATION

| Degree/Certificate | Institute/Board                           | Year      |
|--------------------|---|-----------|
| B.Tech.            | 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 the **TF-IDF** algorithm from scratch, calculating the **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.
- IITG StackOverflow** Jul. '23 - Aug. '23  
*Personal Project* [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.
- BigInteger** Feb. '23  
*Personal Project* [Github](#)
  - Created a lightweight **arbitrary-sized integer** class for C++ utilising **Object-Oriented Programming** concepts.
  - Supports all arithmetic, relational, assignment, input/output operations and additional functions such as lcm, gcd, etc.
  - Used **no additional dependency** except the standard C++ library.

## ACHIEVEMENTS

- Expert on Codeforces:** Achieved a peak rating of **1641** 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 the **top 1.25%** among **4 lakh** candidates.
- Solved **1000+ programming problems** on all coding platforms combined.
- Joint Entrance Examination 2020:** Secured a rank in the **top 1%** among **1.17 million** candidates.
- Young Scientist Talent Test 2018:** Among the **top 10** students in the state.

## TECHNICAL SKILLS

|  |  |
|--|--|
| <b>Programming languages:</b> C/C++, Python* | <b>Web Technologies:</b> HTML, CSS, Node.js, React |
| <b>Database Management:</b> MySQL            | <b>Miscellaneous:</b> NumPy*, Git                  |
|  | * Elementary proficiency                           |

## KEY COURSES TAKEN

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

## 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 2022:** Devised a solution to address the 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