



## EDUCATION

Year	Degree/Exam	Institute	CGPA/Marks
2026	M.TECH	IIT Kharagpur	7.28 / 10
2024	B.Tech (CSE)	Madan Mohan Malaviya University of Technology	7.23 / 10
2019	CLASS XII	CBSE	81.2%
2017	CLASS X	CBSE	10 / 10

## COURSEWORK INFORMATION

Algorithm Design and Analysis | Programming and Data Structures | Computer Organisation and Architecture | Operating Systems | Computer Networks | Machine Learning | Natural Language Processing | OOPs | DBMS

## PROJECTS

**Trie-based Autocomplete and Autocorrect Engine**

C++ | Trie | Priority Queue | Prof. Niloy Ganguly | Google Web Trillion Word Corpus [ Aug 2024 ]

- Engineered a Trie-based **autocomplete system** for 333K+ words, achieving query latencies between **<1ms and ~15ms**
- Designed a frequency-ranked autocomplete using a **min-heap** to return the **top-K** most relevant suggestions
- Developed **autocorrect functionality** using **Levenshtein edit distance** for nearest valid word prediction
- Optimized **prefix lookups** to **O(L)**, enabling fast autocomplete where search time depends only on input length

**Multi-client Server Chat Application with FAQ chatbot**

C | C++ | TCP/IP | Socket | Prof. Niloy Ganguly | Prof. Mainack Mondal [ Feb 2025 ]

- Built a multi-threaded **TCP chat server** for 50+ clients with **authentication**, chat logs, and 100MB **file transfer**
- Implemented **client-to-client** and **server-to-client communication** with active user retrieval and persistent logging
- Integrated **FAQ chatbot** with **GPT-2 prompts** for server-side query handling and automated responses

**Self-Supervised Framework for Cross-Domain Time-Series Fault Detection**

M.Tech Project | Internship | Anomaly Detection | Prof. S.Bhattacharya | IIT KGP [May2025 - Ongoing]

- Implemented TF-C inspired **self-supervised** framework using **Transformer** encoders for **cross-domain fault detection**
- Designed **time-frequency consistent** model with parallel **TransformerEncoder** and cross-space projection networks
- Achieved **74% fault detection accuracy**, validated with **One-Class SVM** on benchmark FD-A and FD-B datasets

**E-Commerce Web Application**

Web Development | ReactJs | NodeJs | ExpressJs | CRUD | MongoDB | JWT

- Engineered **full-stack clothing e-commerce** platform with **secure user authentication** and **role-based authorization**
- Designed product catalog, shopping cart, and **chatbot interaction** module with **CRUD** functionality
- Built an admin panel for managing users and products with **real-time database updates** in **MongoDB**
- Developed RESTful APIs with token-based authentication and secure request-response handling

**Amazon Price Change Monitor**

Design Lab | BeautifulSoup | Prof. Niloy Ganguly | Prof. Mainack Mondal [Jan 2025]

- Developed **automated scraper** extracting product data from 50+ Amazon pages and storing results in **SQLite**
- Formulated comparison logic to detect **price changes** by matching new data with existing database records
- Updated database records to reflect latest Amazon prices while **preserving** complete **historical trends**

## SKILLS AND EXPERTISE

**Programming Languages:** Proficient: C / C++ | Intermediate : Python | Familiar : Javascript , Java, Bash  
**Libraries/ Framework:** C++ STL , NumPy, Pandas, NLTK, PyTorch, Matplotlib, Scikit-Learn, BeautifulSoup  
**Web Development:** HTML/CSS, React.js, Node.js, Express.js, MongoDB, JWT Auth, REST APIs, Git, Postman  
**Others :** DSA, SQL, OOPs, Memory Management, Scheduling, Socket/Thread Programming, NN, CNN, Transformer

## AWARDS AND ACHIEVEMENTS

- Qualified Flipkart GRiD 6.0 Level-2 (2024)** - Ranked in **top 85** team out of 17,391 participants
- Solved **700+** problems across multiple coding platforms | Achieved Global Rank **785/33,951** in LeetCode **BWC(164)**

## CERTIFICATIONS

- Object-Oriented System Development | OOPs Principle , UML | NPTEL Course | IIT KGP
- Web Scraping with Python | Udemy
- Social Network Analysis Course | Graph Theory | PageRank | Centrality | NPTEL | IIT Madras

## POSITIONS OF RESPONSIBILITY

- Teaching Assistant, PDS Lab, IIT KGP** - Conducted tutorials & coding sessions mentoring 80+ B.Tech first year students, designed, evaluated, and graded programming assignments to enhance coding proficiency
- Presented a seminar on Generative AI** under **Prof. Pabitra Mitra**, delivering to an audience of 60+ students