ANURAG GHOSH

Kolkata, West Bengal, India
Portfolio anurag-ghosh Anurag-ghosh-12 LeetCode

EDUCATION

Indian Institute of Engineering Science and Technology, Shibpur **2022 – 2026**
B.Tech in Computer Science and Technology - CGPA - 9.87 Howrah, West Bengal, India

Vivekananda Mission School, Joka **2022**
Higher Secondary Education - ISC (Class XII) Score - 98.50% Joka, West Bengal, India

Vivekananda Mission School, Joka **2020**
Secondary Education - ICSE (Class X) Score - 98.40% Joka, West Bengal, India

EXPERIENCE

Software Development Engineer Intern, Amazon **January 2026 – June 2026**
Amazon Web Services, Just Walk Out Bengaluru

- **Enhanced AWS Just Walk Out's End-to-End Testing Platform Stability through Automated Cross-Service Cleanup**, a serverless recovery orchestration system using **AWS Step Functions and Lambda** for replay test environments involving **6 dependent services**.
- Designed an automated cleanup and recovery pipeline using **AWS Step Functions and Lambda functions** to detect stale states, insert downtime records, and validate event processing recovery after failed historical data replays, leveraging **retry handling, error classification, and fail-fast execution** across distributed services.
- Implemented **production safety validations** and **CloudWatch observability dashboards** for real-time health monitoring, while automating a failure recovery process that reduced manual effort by **15 minutes per incident** and saved approximately **63 hours of manual efforts annually**.

Summer Fellowship, SENSE Lab, IIT Madras **May. 2025 –July. 2025**
Computer Science and Engineering, Indian Institute of Technology Madras

- Under the guidance of **Prof. Ayon Chakraborty**, developed and evaluated deep learning models for Radio Environment Map (REM) prediction using wireless sensing data; improved predictive accuracy by applying **U-Net** architectures and investigating novel **Transformer** and **attention-based** modifications.

Project Intern, R.C. Bose Centre for Cryptology and Security **Sept. 2024 – Dec. 2024**
Indian Statistical Institute,**ISI Kolkata** (Funded under ISEA Phase III) Kolkata

- Contributed to a post-quantum cryptography project under **Prof. Subhamoy Maitra** by enhancing the NIST-standardized **Kyber algorithm**; implemented targeted optimizations in its core components to improve both cryptographic security and computational efficiency.

PROJECTS

Automated Timetable Generator | Java

- Engineered a robust **algorithm** to tackle the NP-hard problem of scheduling and timetable generation for educational organizations; using **OOP principles**, enhanced system scalability and maintainability, reducing manual scheduling time by 80% and increasing scheduling accuracy by 95%

Library Management System (SQL) | MySQL, PostgreSQL

- Developed a **6-table database** for managing books, members, and staff, reducing data redundancy by **40%**.
- Optimized **query execution time by 50%** through indexing and normalization.
- Designed **automated triggers** for book availability, cutting manual tracking by **90%**.

Flower Image Classification using Convolutional Neural Network | Github

- **Technology Stack Used**: Python, OpenCV, TensorFlow, Keras, Streamlit, Matplotlib, NumPy, PIL
- **Preprocessed** a dataset of 3,670 labeled images of flowers (roses, tulips, daisies, dandelions, sunflowers) by resizing them to 180x180 pixel images and normalizing them for **supervised machine learning**.

- A **Convolutional Neural Network (CNN) model** was developed, achieving an initial accuracy of 58%. The CNN architecture consisted of convolutional and pooling layers followed by fully connected layers for classification.
- **Data augmentation techniques** were applied during training to enhance model robustness. This resulted in an improved **accuracy of 73.57%**, after training the model for 12 epochs.

Dog-Cat Binary Image Classification using Convolutional Neural Network | Github

- **Technology Stack Used**: Python, Streamlit, TensorFlow, Keras, Matplotlib, NumPy
- Achieved an accuracy of 84.22% using a **C**NN model with **Adam optimiser and binary cross-entropy loss function**, trained for 20 epochs, significantly surpassing performance compared to an Artificial Neural Network (ANN) model.

TrendPulse | React, React Router, Google Charts, Vercel

- Built a **cryptocurrency tracking application** using React JS, and utilized Context API for efficient state management.
- Developed a user-friendly UI by integrating CoinGecko API for 24/7 updates, streamlined navigation using **React Router**, visualized crypto data with **React Google Charts**, and efficiently deployed the application on Vercel.

RESEARCH PROGRAMS ATTENDED

Indian Summer School on Cellular Automata **May 2024 – July 2024**
Summer Fellow and Project work Hybrid

- Analyzed primitive polynomials using maximal-length cellular automata, exploring their theoretical properties and applications; implemented greedy strategies in **C++** for generating primitive polynomials over **GF(2)**.

PUBLICATIONS & RESEARCH

1. Exploring Maximal Length Cellular Automata to Generate Primitive Polynomials in GF(2)
Research Publication — Northeast Journal of Complex Systems

2. Brain Tumor Classification Using Attention-Based Medical Image Segmentation and Transfer Learning
Paper Presentation — AIIoT 2025: 2nd International Symposium on Artificial Intelligence and Internet of Things

SKILLS

Languages: C++, C, Javascript, Java
Technologies/Frameworks: Linux, Git, GitHub, HTML, CSS, React, Node.js, MySQL, MongoDB
Familiar: Object Oriented Programming, Machine Learning, Deep Learning, Data Structures and Algorithms, Computer Network, Operating System
Soft Skills: Leadership, Teamwork

ACHIEVEMENTS

- **Academic**: **Ranked 1st** in the **Department of Computer Science and Technology** and **across all departments in IIEST Shibpur** (BTech batch 2022-2026)
- **Fellowship**: Awarded with the Samsung Fellowship for the India Semiconductor Workforce Development Program
- **Problem Solving**: Achieved a maximum Rating of 1612 on Codechef and 1641 on Leetcode
- **Teamwork**: Participated in **Flipkart Grid 5.0 Software Development Track** and Qualified for the Level 2.0 quiz.
- Awarded **INSPIRE SHE Scholarship** for excellent performance in 12th Board Examinations.
- Awarded Second Place in BrainDead, the Machine Learning Hackathon at Revelation 2025, the Departmental Technical Fest of Computer Science and Technology, IIEST Shibpur, competing against 31 teams from institutes across India.