Jiyanshu Dhaka

Final Year Undergraduate
Major: Statistics and Data Science
Minors: Computer Science - Machine Learning , Cognitive Sciences

jiyanshudhaka2003@gmail.com
Jiyanshu Dhaka | jiyanshud22@iitk.ac.in
jiyanshud22 | +91-9413186425

ACADEMIC QUALIFICATIONS

Year	Degree/Certificate	Institute	CPI/%
2022 - present	Bachelor's	Indian Institute of Technology Kanpur	**8.1/10**
2021	RBSE (XII)	Disha Delphi Senior Secondary School	**97.8**%
2018	CBSE (X)	Gurukul International School	**94.8**%

ACHIEVEMENTS

- **KVPY(SB)** Scholar 2021 with **AIR 28** and **KVPY(SA)** Scholar 2019 with **AIR 832** in CRL conducted by IISc, Bangalore
- Secured **AIR 3846** in **JEE (Advanced) 2022** (0.16M shortlisted) and **AIR 4025** in **JEE (Main) 2022** (1M+ candidates)
- Awarded the **Reliance Foundation UG Scholarship**, a merit-cum-means scholarship granted to 5,000 students nationwide
- Achieved **A*** in **Human Centered Computing** & **Computational Cognitive Science**, and secured **A/A*** in **14** courses
- Achieved **Max Rating: 1852 (Codeforces Expert)** with **Global Rank 95/11,529** in Round 1035 | **Imvengeance3846**

WORK EXPERIENCE

CHAMPHUNT INC | *Machine Learning Internship* (*Sep'24–Jan'25*)

- Built **Hybrid Post Recommender** (content + collaborative filtering), boosting relevance by **28%** & engagement by **3 min**
- Built **Q-Learning friend recommender** using Q-table updates from user interactions, achieving **78%** user acceptance rate
- Integrated **location match, follower overlap**, & **noise factors** with weight tuning, boosting **personalization** for **5k** users
- Built **Cricket Ball Detection Algorithm** using **Contour Detection + YOLOv8**, **HSV masking & temporal checks**
- Applied **Gaussian blur** & **morphological operation** to reduce noise; Used **Optical Flow** & **Kalman Filter** for smoothing
- Automated extraction of **ball–pitch contact frames; classifying deliveries** as yorker, bouncer, etc. to improve analysis

SALTMINE USA INC | *Workspace Design Automation Intern* (*Feb'25–Jul'25*)

- Built **stacking algorithm** using **greedy allocation**, **proportional distribution**, and adjacency modeling for constraints
- Generated **85%+ valid** stack plans, with ∼ **90% match** to manual outputs, reducing manual workload by **(∼3–4 hrs/day)**
- Built grid-based zoning engine using **ILP** optimization to satisfy adjacency, periphery, diagonal, and block-pattern constraints
- Implemented **MCMC** + **combinatorial optimization** based sampling to optimize **objective functions** across constraints
- Developed zoning web app with **NLP-driven interface** translating custom rules into constraints and visualized grid layouts

RESEARCH EXPERIENCE

Passive Image Forgery Detection | *Prof. Nisheeth Srivastava* | (*Dec'23–Feb'24*)

- Implemented **Error Level Analysis** with **HSV contour analysis** to expose tampered regions via pixel-level inconsistencies
- Detected **fake medical scans, X-rays, and morphed reports**, aligning with ongoing **cybersecurity forensics research**
- Classified **507 bonafide** and **210 morph** images as **original or forged**, achieving **80.1%** and **78.7%** accuracy respectively

PROJECTS

Microsoft Boggle Solver | *Self Project* | (*Jun'25–Jul'25*)

- Implemented a **backtracking algorithm** on an $n \times n$ matrix to generate all valid solutions for the Microsoft Boggle game
- Integrated a **Trie-based dictionary** with **40,000+** word entries for efficient word search and validation in the **Boggle grid**
- Designed reusable components in **C++ Object-Oriented style** including Trie header file and random board generator class

Gale-Shapley Algorithm | *Self Project* | (*Jan'25–Mar'25*)

- Implemented the **Gale-Shapley** stable matching algorithm using **C++** to generate and analyze **1000+ random datasets**
- Conducted **probabilistic simulations** in **R** showing proposals concentrated near **1.5n log n**, matching with **nHn bound**
- Analyzed that **runtime decreases** from worst-case $O(n^2)$ to probabilistic $O(n \log n)$, applying coupon collector arguments

Cryptographic Techniques | *Course Project CS670* | *Prof. Adithya Vadapalli* | (*Jan'24–Apr'24*)

- Designed and Implemented **Authenticated PIR** protocols like **Two-Server PIR, Computational PIR** and **Secure PIR**
- Enhanced **Garbled Circuits** with **Point-and-Permute optimizations**, analyzing gate efficiencies and encryption strategy
- Explored **Oblivious Data Structures**, employing **Secure MPC** to ensure confidentiality in collaborative data processing

Randomized MST Sampling | *Self Project* | (*May'25–Jul'25*)

- Developed a **Las Vegas Randomized Algorithm** to estimate MST weight, cutting runtime from $O(n^2 \log n)$ **to** $O(n \log n)$
- Derived a tight upper bound on MST weight in random graphs via probabilistic analysis of **Prim's** and **Kruskal's** algorithms
- Applied **IT Sampling** to generate candidate edge weights; Validated theoretical upper bound of ∼**1.38** via **MC simulations**

TECHNICAL SKILLS

C | C++ | Python | Java | JavaScript | SQL | HTML | CSS | LaTeX | Git | GitHub | DSA | Linux | VS Code | Jupyter Notebook | Docker | REST APIs | Django | React.js | Node.js | MongoDB | OpenAI | NumPy | Pandas | scikit-learn | TensorFlow | PyTorch

RELEVANT COURSES

** → A, ** → A**

Data Structure & Algorithm	Introduction to Machine Learning*	AI Techniques in Data Mining*
Data Science Lab (I),(II) & (III)*	Human Centered Computing**	Computational Cognitive Science**

POSITIONS OF RESPONSIBILITY (*Jul'23–Apr'24*)

Academic Mentor, ICS, IITK	Web Secretary, CWC, IITK	Executive, Stamatics Club, IITK