KARTIK MITTAL

ACADEMIC DETAILS

Year	Degree / Board	Institute	GPA / Marks(%)
---	B.Tech in Civil Engineering	Indian Institute of Technology Delhi	8.59
2023	C.B.S.E	Scottish International School	96.8
2021	C.B.S.E	Scottish International School	98.8

SCHOLASTIC ACHIEVEMENTS

- **Class 10 C.B.S.E Board:** Secured **Rank 3** in the **District Merit List** & **Awarded by then DM Ms. Jasjit Kaur, IAS** [2021]
- **Class 12 C.B.S.E Board:** Secured **Rank 2** in the **District Merit List** in the PCM Stream with academic excellence [2023]
- **JEE (Main):** Secured a **AIR 432 (GEN-EWS)** out of approximately 1.1 million competing candidates nationwide [2023]
- **JEE (Advanced):** Secured a **AIR 542 (GEN-EWS)** out of approximately 1.8 lakhs competing candidates nationwide [2023]
- **Departmental Rank:** Achieved **Rank 4** in the Civil Engineering department based on academic performance [2025]
- **Top Performer:** Among the top performers in the department with **9.68 and 9.16 SGPA in 3rd & 4th semester** respectively

PROJECTS

- **Spreadsheet Program | (Graph-Based Evaluation & Data Handling)**   (June, 2024- August, 2024)
  - Built a spreadsheet engine for **arithmetic operations** and constraints using **custom parsing** and **graph-based evaluation**
  - **Dependency tracking** and updates through **Linked lists and AVL Trees**, enabling efficient recalculation of affected cells
  - Used **Kahn's Algorithm** for topological sorting, enabling single-pass recomputation & **eliminating redundant calculations**
  - **Handled errors** for invalid commands, circular references, zero division, and cascading failures, **improving reliability**
  - **Optimized memory allocation** by dynamically allocating rows **supporting large-scale spreadsheets, improving scalability**

- **Screen Recording & Video Sharing Platform | (Full-Stack Web Application)**   (November, 2025- January, 2025)
  - Built a video platform with **Next.js, Tailwind, Bunny.net & Xata**, enabling screen recording, uploads, and AI transcripts
  - Used **Drizzle ORM & Xata** for **type-safe queries** and scalable real-time DB operations, improving **backend effciency**
  - Implemented **secure authentication via Better-Auth with Google OAuth**, enabling multi-tenant and protected access
  - Secured the platform using **Arcjet** for **bot protection, rate limiting, and email validation** further **boosting system reliability**

- **Flight Route Optimization System | (Algorithm Design and Data Structures)**   (February, 2025 - March, 2025)
  - Built a fight planner using **BFS and Priority queues** to compute **least-hop, cheapest, and hybrid routes** within time limits
  - Designed custom data structures (ArrayQueue, Heap) for **optimized traversal**, enhancing efficiency and control flow
  - Implemented **Merge Sort** for fight scheduling by arrival time, enabling **faster decision-making** during route selection
  - Modeled fights as a **time-aware graph with constraints on wait and arrival**, ensuring realistic, accurate routing logic

- **JEE-PathShala - By IITians, For Future IITians | (Full Stack ReactJS LMS Web Application)**   (May, 2025 - Present)
  - JEE-PathShala, a **full-stack MERN-based LMS** to deliver structured free and paid JEE preparation courses
  - **Dedicated Dashboards for Students and Educators** to streamline **learning, tracking, and content management**
  - Integrated **Clerk Auth** for secure student/educator authentication & **Stripe** to manage paid course access seamlessly
  - Aiming to evolve into a **complete JEE ecosystem** with integration of student-first features like doubt-solving

TECHNICAL SKILLS

- **Languages & Algorithms:** - HTML, CSS, JavaScript, SQL Queries, along with Data Structure & Algorithms using Java
- **Web Development:** MERN Stack (MongoDB, Express.js, React.js, Next.js, Node.js), RESTful API, Tailwind, Bootstrap
- **Databases & Storage:** MongoDB(with Mongoose), MySQL | **MS Packages:** MS Excel, MS Word, MS PowerPoint
- **Core CS Skills:** Object-Oriented Programming (Java), Operating Systems, Computer Networks, DBMS fundamentals
- **Dev Tools & Platforms:** Git & GitHub, Postman, Visual Studio Code, IntelliJ IDEA, WebStorm, AutoCAD, DESMOS
- **Cloud Services:** Fundamental knowledge of AWS services including IAM, EC2, S3, EBS, RDS, DynamoDB, Lambda VPC, Amplify, CloudFormation, Route 53, CloudFront, ELB, Auto Scaling, Amplify, ECS, EKS, and AWS CLI setup
- **Security & Automation:** DNS confguration, SSL/TLS encryption, Terraform basics, and full-stack cloud deployments

EXTRA CURRICULAR ACTIVITIES

- Worked as a **PW Consultant (April–November 2024)**, mentoring JEE Students through academic doubt sessions.
- Mentored students at Scottish International School providing subject-specifc guidance and motivation to JEE aspirants.
- **Participated in NSS campus & community service at IIT Delhi**, including educational outreach and awareness campaign.
- Consistently explore and contribute to technical projects beyond academics as a **self-taught developer and enthusiast**.
- Showcased creativity through paper folding. Known among peers for crafting detailed and expressive origami designs.
- **Solved 1000+ LeetCode Data Structure problems**, consistently refecting skills in DSA and problem-solving profciency.

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IIT COURSE

Degree	Institute	CGPA	Dept. Rank
B.Tech in Civil Engineering	Indian Institute of Technology Delhi	8.59	4

COURSES DONE

Calculus, Chemistry Laboratory, Engineering Mechanics, Introduction To Chemistry, Language & Writing Skill, Engg. Visualization & Comm., Product Realization Through Manufacturing, Professional Ethics And Social Responsibility - I, Introduction To Engineering, Intro. To Electrical Engg., Intro. To Electrical Engg., Language & Writing Skill-2, Electromagnetic Waves & Qua.mec., Intro. To Computer Science, Physics Laboratory, Linear Algebra & Diffe. Equa., Civil Engineering Materials, Engineering Geology, Engineering Geology Laboratory, Elements Of Surveying, An Introduction To Literature, Mechanics Of Fluids, Mechanics Of Solids, Professional Ethics And Social Responsibility - Ii, Hydraulics Laboratory, Intro. To Transportation Engg., Soil Mechanics, Transportation Engg. Laborator, Hydraulics, Soil Mechanics Laboratory, Structural Analysis I, Structural Analysis Laboratory, Environmental Science

QUALIFYING EXAM

• **Joint Entrance Examination (JEE) Advanced Rank:** 542 (GEN-EWS)