Aditya Jaiswal

Entry Number- 2023EE10512
BTech - Electrical Engineering
Indian Institute of Technology, Delhi

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Education

Degree/Certificate	Institute/Board	CGPA/Percentage	Year
B. Tech	Indian Institute of Technology, Delhi	8.2	2023-Present
Senior Secondary, ISC	City Montessori School, Lucknow	98%	2023
Secondary, ICSE	City Montessori School, Lucknow	98.4%	2021

Achievements

- **Department Change** from Energy Engineering to Electrical Engineering at the end of 1st Year. *2023-24*
- **Joint Entrance Examination (JEE) Advanced, 97.2 %tile**, among 250,000 candidates who appeared for the exam. *2023*
- **Joint Entrance Examination (JEE) Main, 99.4 %tile**, among 1.15 million candidates who appeared for the exam. *2023*
- **INSPIRE Scholarship,** Govt. of India, in the top 1% of candidates who appeared for 12th boards. *2023*
- **Silver Medalist at** the International Young Mathematicians' Convention, Chui Chang Organization. *2022*
- **Gold Medalist at** the Burgas International Mathematics Olympiad. *2022*
- **Indian Olympiad Qualifier in Physics**, in the state top 1% of candidates who appeared for the exam. *2022*
- **Kishore Vaigyanik Protsahan Yojana (SA), AIR 738**, in the top 0.1% of candidates who appeared for the exam. *2022*
- **National Talent Search Examination,** in the top 0.1 % of candidates who appeared for the exam. *2021*
- **Hindustan Olympiad,** the District Topper of Lucknow, Uttar Pradesh. *2021*

Experience

- **Invention Factory 2024** *May 2024 – July 2024*
  Research Internship On-site
  - Participated in an innovation program aimed at developing practical inventions to solve real-world problems.
  - Received a provisional patent (202411077568) for the developed invention and earned a stipend for the research work.
  - Fosters hands-on learning and encourages interdisciplinary thinking, focusing on practical inventions that have a meaningful impact.

- **AXLR8R FORMULA RACING** *February 2024 – August 2024*
  Chassis and Brakes Team On-site
  - IIT Delhi's Formula SAE team, where 40 undergraduates design and build a single-seat electric race car for international competitions like Formula Student Germany and Formula Bharat.
  - Documented different Arduino projects and ran a plagiarism checker on all the documents made by our team.

Projects

- **Fabrication of Electronic Devices** *November 2024 - Present*
  Research Project under Professor
  - Conducted spin coating of WS_2 material on substrates for thin-film fabrication, optimizing process parameters for uniform deposition.
  - Developed expertise in handling 2D materials and ensuring high-quality layer formation for electronic applications.

- **Library Digitalization** *October 2024*
  Course Project Link to Project
  - The project involved designing and implementing various hash table strategies and algorithms to optimize keyword searches and compressed dictionary generation for each book.
  - The hash tables were dynamically resized to maintain space efficiency and performance, ensuring optimal load factor.
  - Merge sort for lexicographical sorting of words and hashing techniques (Polynomial Accumulation Hash) for fast lookup and insertion of distinct words within the book texts.

- **Treasure Quest: The Straw Hat Crew!** *September 2024*
  Course Project Link to Project
  - The project required managing multiple treasures arriving at different times and sizes. I developed algorithms that assigned treasures to crewmates based on their current workload and processed them using priority-based scheduling.
  - The system was designed to adjust dynamically based on the arrival of new treasures and continuously update the completion times and assignments. The complexity was optimised to ensure efficient scheduling with a time complexity of O (nlogn + logm).
- **Galactic Cargo Management System** *August 2024*
  Course Project Link to Project
  - The system used AVL trees to store and manage bin and object information. The implementation ensured that the time complexity for operations was maintained at O(logn+logm), ensuring optimal performance even with large inputs.
  - Modeled the bin-packing problem for interstellar cargo using various algorithms to allocate objects to bins efficiently.
- **Pac-Man in Maze World** *August 2024*
  Course Project Link to Project
  - Developed a navigation system for Pac-Man in a haunted maze using stack-based algorithms. Implemented a 2D grid where Pac-Man avoids ghosts, represented as obstacles.
  - The project reinforced my understanding of stack operations and grid traversal techniques.
- **Cryptocurrency Price Prediction** *June 2024*
  Self-Project Link to Project
  - Developed AI/ML models to predict daily closing prices of Ethereum (ETH), Arbitrum (ARB), and Chainlink (LINK) between June 5th and June 18th, 2024, for a competitive challenge.
  - Analysed key metrics influencing token price, including past variance, intra-day price movements, and correlations with other cryptocurrencies.
  - Integrated alternative data, such as Google Trends, to capture market sentiment and refine predictive models.
  - Back tested models for enhanced accuracy and reliability, optimising for Mean Squared Error.
- **Speed Control of DC Motor** *March 2024 - April 2024*
  Course Project Link to Project
  - Used the Armature Voltage Control Method to control the speed of the PM-DC motor and verified the same using a DSO.
  - Created and implemented the circuit on breadboard used BJT(2N2222) and Free-Wheeling Diode (DN4007).
  - Used NE555P timer to generate square pulses, modulated using a potentiometer, varying the speed from 50% to 100%.
- **Remote-Controlled River Cleaning Vehicle** *September 2023 – October 2023*
  Course Project Link to Project
  - Designed and developed a remote-controlled vehicle to collect and remove waste from water bodies, utilizing an eco-friendly approach with a net mesh and custom components.
  - Successfully tested the vehicle in a swimming pool, achieving efficient garbage collection while maintaining buoyancy and control.
  - Developed hands-on skills in fabrication, coding, and project management.

TECHNICAL SKILLS

- **Programming**: Python, Java, C++*, Verilog*, JTAG*
- **Others**: MS Office, MS Teams, AutoDesk Inventor, Solidworks, Visual Studio, Fusion 360, Intel Quartz II*, Ansys*
- **Operating Systems**: Windows, Ubuntu, Macintosh

* *Elementary proficiency*

KEV COURSES TAKEN

- **Completed**: Calculus, Linear Algebra and Differential Equations, Introduction to Computer Science, EM Waves and Quantum Mechanics, Engineering Mechanics
- **Ongoing**: Data Structures and Algorithms, Probability and Stochastic Processes, Signals and Systems, Digital Electronics, Circuit Theory, Physical Electronics, Control Engineering, Sociology of India

EXTRA-CURRICULAR ACTIVITIES

- **Class Representative**, 2nd Year, B.Tech. Electrical Engineering. *November 2024 - Present*
- **Inter Hostel Games Championship**, 100m athlete, 4th in 100x4 relay. *January 2024 - Present*
- **Rendezvous**, Cultural Fest, IIT Delhi, Activity Head under Hospitality and Logistics Vertical. *October 2024*
- **Tryst**, Technical Fest, IIT Delhi, Team Head under Marketing Vertical. *March 2024*
- **National Sports Organization (NSO)**, part of different semester long projects. *October 2023 - Present*