Preesha Agrawal

Entry Number- 2024CS50888
BTech+MTech in Computer Science and Engineering
Indian Institute of Technology, Delhi

+91-8275949785
preeshaagrawal2006@gmail.com
Github - Preesha Agrawal
LinkedIn - Preesha Agrawal

Education

Degree/Certificate	Institute/Board	CGPA/Percentage	Year
BTech+MTech in CSE	Indian Institue of Technology, Delhi	9.27	2024-Present
Senior Secondary, State board	Spring Dales College, Chhatrapati Sambhajinagar	91.43%	2024
Secondary, CBSE	Nath Valley School, Chhatrapati Sambhajinagar	98.4%	2021

Achievements

- **Semester Merit Award**, For SGPA 9.313/10, awarded every semester to the top 7% students of IIT Delhi *2025*
- **Current Departmental Rank (Dual degree CSE, IIT Delhi)**, **14** *2025*
- **Mimamsa Examination**, **Zonal toppers (Delhi)** in National level UG Science competetion conducted by IISER Pune *2025*
- **Joint Entrance Examination (JEE) Advanced, AIR 1061**, out of **200,000 candidates**, who appeared for the exam. *2024*
- **Joint Entrance Examination (JEE) Main, AIR 353, Mathematics score of 100/100**, in the **99.98 percentile** of candidates *2024*
- **National Standard Examination in Physics (NSEP)**, State Top 1% in the exam conducted by IAPT, as initial qualifiers for IPhO *2023*
- **Silver Medallist for project on Menstrual Hygiene Waste Management**, in Homi Bhabha Balvaidnyanik Examination(**MTSA**) *2018*

Projects

- **India Oriented Carbon Capture Utilisation and Storage** *(with Prof. Avanish & Prof. Kaushik)* *Jan 2025*
  - **Represented IITD** at a nationwide stage in the hackathon.
  - Designed a extensive **nationwide CCUS hub network** with cost and feasibility analysis.
  - Scraped national registry data for locating carbon-emitting cement, steel, and coal plants.
  - Proposed ML-based **optimization** for predicting CO_2 emissions and subsequent **resource allocation** for CCUS hubs.
- **Fire Forecasting and Spread Modeling** *(Bharatiya Antariksh Hackathon, conducted by ISRO)* *Jun 2025*
  - Developed **LSTM model** for short-term fire forecast using **multi-variate time series** (weather + vegetation indices).
  - Reviewed and synthesized insights from multiple research papers, scraped data from **Google Earth Engine**.
  - **Fire spread simulation: Cellular Automata (CA)** used physics approach incorporating slope, vegetation, wind, and fuel moisture.
  - Benchmarked LSTM and CA against physics-based and ML baselines for early warning and accuracy.
- **Wooden Chip Identification via Image Segmentation** *(Industrial project with ITC Limited in collab with ARIES)* *Jul 2025*
  - Tackled **image segmentation** into wooden chips from low-res, motion-blurred factory images with **only 6 initial samples**.
  - Benchmarked CV methods (Canny, watershed, K-means) against deep models including **Meta's SAM**.
  - **Curated a 50k+ dataset** with synthetic distortions and **fine-tuned SAM** with LoRA adapters, achieving IoU/Dice gains.
- **Time Travelling File System** *(Under Prof. Rohit Vaish)* *Sep 2025*
  - Built an **in-memory version control system** in C++ inspired by Git.
  - Implemented Trees, HashMaps, and Heaps to support **branching, rollback, snapshots, and history tracking** via CLI.
  - Designed **heap-based analytics** for recent files and largest version trees.
- **FPGA based projects (software: Vivado, Language: Verilog)** *(Under Prof. Preeti Ranjan Panda)* *Jul–Sep 2025*
  - Built Memory Read and Write (A control unit that handled reading and writing to three memory blocks: 1 ROM and 2 RAMs).
  - Designed MAC Unit, Dot Product Calculator storing 2 vectors and computing dot product by passing indexed values to MAC, Seven Segment Display (SSD) on an FPGA.
- **Chatbot for IITD Life and Academics** *(ARIES Shipathon)* *Jan 2025*
  - Built a **"Campus Buddy" chatbot** answering queries on campus life, academics, and internships.
  - Scraped and aggregated institute data into a vector database and integrated with **Gemini using RAG** for response optimization.
  - Ranked **3rd in the campus** with 40+ teams.
- **Solar-based Dryer for Clothes and Shoes** *(Under Prof. Sagar Sarkar)* *Sep–Nov 2024*
  - Built a portable **Arduino-controlled** box dryer with motorized mirror flaps and fans for efficient sunlight use.
  - Prototyped a hybrid solar-electric system tested under varying light conditions.
  - Other components that were utilized and programmed: **Stepper motor, Relays, Motor drivers**

Key courses taken

- **Computer Science**: COL106 : Data Structures and Algorithms, COL202: Discrete Mathematics, COL215: Digital Logic and System Design, COL100 : Introduction to Computer Science (using Python)
- **Mathematics**: MTL106 : Probability and Stochastic Processes, MTL100 : Real Analysis and Calculus, MTL101 : Linear Algebra and Differential Equations

Technical Skills

- **Languages**: Python, C/C++, Verilog, LaTex, powershell
- **Libraries and Packages**: Pandas, Numpy, Pytorch, Sklearn, Tensorflow, Matplotlib, Selenium, BeautifulSoup
- **Softwares**: FreeCAD, Vivado (Verilog), MATLAB

Extra Curricular Achievements and Positions of Responsibility

- **Brain Executive, ARIES**, Research and administrative division of ARIES, the student led AI/ML club at IITD *July 2025 - Present*
- **Journalist, Board of Student Publications**, Campus news, media, and creative writing board of IITD *Jul 2025 – Present*
- **Convenor for Kailash Hostel, DebSoc**, Debating Society of IIT Delhi *July 2025 - Present*
- **Winners**, in Monevity, Economic Clubs' Flagship Economics Case Competition for Freshers *August 2024*