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EDUCATION

Year	Degree/Certificate	Institute	CPI/%
2023-Present	MS By Research/CSE	Indian Institute of Technology, Kanpur	9.25/10
2019-2023	B.Tech/Computer Science & Engg.	Hitkarni College Of Engg.& Technology, Jabalpur	8.88/10
2019	Central Board of Secondary Education(XII)	Army Public School No.1, Jabalpur	78.00%
2017	Central Board of Secondary Education(X)	Army Public School No.1, Jabalpur	8.4/10

RESEARCH EXPERIENCE

- **Morgan Stanley : Data-Strats Intern** *(Jan'25 - Jul'25)*
  - Automated the generation of **250+ charts** and **exhibits** by evaluating underlying formulas for research purposes using **Pandas** and **NumPy**, integrating data from web APIs. Ensured summarization of vast datasets while maintaining data integrity and visualization quality.
  - Automated data extraction from PDFs using **Camelot** and **Tabula**, transforming unstructured content into clean, structured datasets to enable effective machine learning workflows.
  - Utilized **Plotly** and **Dash** to develop an **interactive dashboard** for **UK electricity zonal divisions**, featuring **choropleth maps**, **dynamic scatter plots** of energy companies, and integrated **statistical tabular data** to enhance **spatial and analytical insights**.

- **Ministry Of Toursim : TSA AUTOMATION** (MS By Research) Guide: Prof. Nisheeth Srivastava *(Apr'24 - Present)*
  - Automated Tourism Satellite Account calculation by cleaning data from Domestic and International Tourism Surveys 2015 and integrating supply-use data from MOSPI and NCAER, using **Bayesian and bootstrap sampling** for extrapolation due to limited samples.
  - Focused on automating **TDGDP, TDGVA, GVA, GDP**, and tourism's GDP percentage.
  - Developed a Bayesian time series model for accurate GDP trend projections and tourism impact analysis.

COURSE PROJECTS

- **Linear Model Analysis For CAR PUFs** | CS771: Intro to ML | Prof. Purushottam Kar *(Jan'24-Apr'24)*
  - Harnessing dual arbiter PUFs and a concealed threshold τ, the CAR-PUF outputs 0 when $|\Delta w - \Delta r| \leq \tau$; else 1.
  - Constructed a novel approach for CAR-PUF modeling with linear models, expanding features from **32** to **528** dimensions.
  - Achieved a prediction accuracy of over 98% for CAR-PUF responses using **ML** techniques (LinearSVC, LogisticRegression).
  - Examined the impact of **hyperparameters (C, loss, tol)** on training time and accuracy, offering optimization insights.

- **Indian Education System Visualization** | CS661: Big Data Visual Analytics | Prof. Soumya Dutta *(Jan'24-Apr'24)*
  - Built a web app visualizing India's education progress from primary to higher levels with state-wise literacy and transition stats.
  - Added interactive Plotly graphs for literacy, transition rates, and student-to-teacher ratios across states.
  - Used Kaggle datasets to enable state exploration via a map with hover and click features.

- **Tornado Isocontour Visualization** | CS661: Big Data Visual Analytics | Prof. Soumya Dutta *(Jan'24-Apr'24)*
  - Extracted 2D **isocontours** from grid data, using VTK for data handling and ParaView visualization.
  - Rendered 3D volumes with **custom color/opacity functions** and optional Phong shading in VTK.
  - Built interactive **isovalue slider** and histogram interface with Plotly and Jupyter Widgets.
  - Generated 3D **streamlines** with RK4 integration, output as VTKPolyData.

SELF PROJECTS

- **Hemansta Social Media:** My social media *(Jun'24-Nov'24)*
  - Developed Hemansta, a social media app with follow requests, user blocking, stories, and profile updates; integrated Clerk (authentication), Postgres Neon DB (data), Cloudinary (images), and optimized UI with server actions.
  - Added interactive features like posting, commenting, and liking for community engagement.
  - Enabled profile customization with options to update display picture, cover image, and personal info.

- **Smart Sign Calculator:** Bridging Gesture & Arithmetic *(Aug'24-Oct'24)*
  - Engineered a real-time hand sign recognition system with **CNNs**, achieving **99.90%** accuracy on test data.
  - Created a custom dataset with webcam-captured hand gestures, applying **Gaussian blur** and **Adaptive thresholding**.
  - Built a CNN model in **TensorFlow** to convert hand signs into **Math expressions**.
  - Enhanced accessibility for **users with disabilities** by utilizing hand sign recognition as an intuitive input method.

RELEVANT COURSES AND TECHNICAL SKILLS

- **Masters Courses:** Introduction to Machine Learning, Modern Cryptology, Big Data Visual Analytics, Sensing Commun. and Networking for Smart Wireless Devices
- **BTech Courses:** Data Structures & Algorithms, OOPS, Operating Systems, Computer Networks,Computer Org. and Arch., DBMS.
- **Programming/Scripting Languages:** C, C++, Python, JavaScript, HTML, CSS, SQL.
- **Libraries/Tools:** React, Express,Node,MongoDB,Postgres, Nextjs, Nodejs,Prisma,C++ STL, NumPy, Pandas, Matplotlib, Git.

Academic Achievements & Positions of Responsibility

- **GATE CS:** Secured All India Rank **221** in **GATE Computer Science** 2025 *(Feb '25)*
- **Competitive Exams Cleared:** Qualified for **BARC Scientist-B 2023** (Roll No: 23CS116041) and **UPSC NDA 2020** (Roll No: 0201528).
- **Teaching Assistant (CS637, ESC111/112):** Provided course instruction support, grading, and student assistance across multiple semesters. *(Jan'24-Present)*
- **Organizer, Open Source Conference (OOSC '24) and Udghosh '24:** Coordinated accommodations and facilitated seamless operations for over 2,000 participants across both events.
- **Student Guide**, Institute Counselling Services, IIT Kanpur: Mentoring freshmen, giving academic support. *(Jul'24-Present)*