

Academic Qualifications

Year	Degree/Certificate	Institute	CPI/%
2022 - Present	B.S (Mathematics and Scientific Computing)	Indian Institute of Technology, Kanpur	8.63 /10
2022	XII (CBSE)	Modern Academy, Gaya	93.4%
2020	X (CBSE)	Creane Memorial High School, Gaya	93.6%

Scholastic Achievements

- Secured **All India Rank 1363** in **Joint Entrance Examination Advanced** among the **150K+** shortlisted candidates2022
- Secured **All India Rank 1353** in **Joint Entrance Examination Mains** among **1M+** applicants from across India2022
- Received the **Academic Excellence Award** for excellent academic performance in 2022-23 academic session2022-23
- Secured **All India Rank 25** in the West Bengal state college entrance examination, **WBJEE 2022** among **100k+** applicants2022
- Recipient of the prestigious **KVPY Fellowship** with an **All India Rank 1035** in **KVPY-SX**, among **100K+** candidates2022
- Emerged as **Zonal topper** in Uttar Pradesh zone in national level science competition **Mimamsa** organized by **IISER Pune**2024

Work Experience

ML driven P300 classification for Enhanced BCI Intent Recognition | SURGE'24 | Prof. Tushar Sandhan

May'24 - Jul'24


Objective	<ul style="list-style-type: none">Enhance the classification of P300 speller, a BCI paradigm using different ML models to achieve high classification accuracy
Approach	<ul style="list-style-type: none">Utilized MNE and torcheeg libraries to visualize P300 data with topographic maps and ERP plots, and detecting artifactsImplemented a baseline Random Forest model and StackNet with multiple classifiers including LDA, SVM, and XGBoostUtilized EEGNet and LMDA-Net for enhanced P300 signal classification and conducted comparative analysis of the modelsIntegrated temporal attention in the LMDA-Net architecture to enhance performance by capturing temporal dependencies
Result	<ul style="list-style-type: none">Attained AUC score of 0.73 with Random Forest, 0.76 with StackNet and 0.79 with EEGNet for P300 speller classificationSelected LMDA-Net as a baseline with highest AUC score of 0.81 and integrated temporal attention to improve performance

Key Projects

Forecasting using Time Series Analysis | Stamatics, IIT Kanpur

May'23 - Aug'23

- Executed comprehensive time series analysis, including data cleaning, resampling, seasonal decomposition and outlier detection techniques
- Enhanced data insights through **Box-Cox** transformations and robust statistical analysis using ADF test, along with **ACF** and **PACF**
- Developed various time series forecasting models, including Autoregressive (AR), Moving Average (MA), **ARMA**, **ARIMA**, and **SARIMA**
- Implemented volatility-based models, including **ARCH** and **GARCH**, to analyze and model **heteroscedasticity** in time series data

The LAMP Stack | Programming Club, IIT Kanpur


Apr'23 - Jul'23

- Attained proficiency in **Linux Terminal**, Virtual machines and gained an understanding of the fundamentals of Computer Networking
- Gained knowledge about the OSI Model, APACHE Web servers, virtual hosting, Log-files, Private Keys, SSLs and the **LAMP Stack**
- Implemented a range of functionalities including **User Authentication**, **Host based Security**, **Indexes**, **Redirection** and **HTTPS**

MERN Stack | Association for Computing Activities, CSE, IIT Kanpur


May'23 - Jul'23

- Designed multiple interactive web applications, including a drum kit, dice game, and simon game, using **HTML**, **CSS** and **JavaScript**
- Developed a comprehensive weather application using efficient **API integration** to seamlessly retrieve and display real-time weather data
- Built a responsive To-Do List app using **Node.js**, **Express**, and **EJS**, featuring dynamic content rendering for efficient task management

ML based Optical Character Recognition | Self Project

May'24 - Jul'24

- Developed a sophisticated Machine Learning model for **Optical Character Recognition** incorporating **LR**, **SVM** and **RF** classifiers
- Applied various image processing techniques such as **Erosion**, **Dilation**, **Thresholding**, **Histogram Equalization** and **Median Filter**
- Utilised different hyperparameter optimization techniques like **k-fold cross validation**, **GridSearchCV** to achieve accuracy of **79.97%**

Vending Machine | Self Project

May'24 - Jul'24

- Implemented comprehensive vending machine using **OOPs** principles to manage product inventory, update stock levels, and track profits
- Integrated secure **owner authentication** to protect administrative functionalities and developed a robust transaction recording system
- Enhanced **inventory management** by allowing real-time updates and additions of products, improving operational efficiency and accuracy

Technical Skills

Programming Languages	Libraries	Utilities
C, C++, MATLAB, Python, SQL, JavaScript, HTML	Numpy, Pandas, Scikit Learn, Tensorflow, PyTorch, MNE	Git, Github, L ^A T _E X

Relevant Courses

*online

Fundamentals of Computing	Data Structures and Algorithms*	Numerical Analysis and Scientific Computing
Introduction to Electronics	Introduction to Probability Theory	Introduction to Management
Single and Multi Variable Calculus	Set Theory and Mathematical Logic	Linear Algebra & Ordinary Differential Equations

Positions of Responsibility

Student Guide | Counselling Service Team

Jul'23 - Apr'24

- Guided and mentored **6 freshmen** students in adjusting to their new environment while also assisting them academically and emotionally
- Coordinated with the Counselling Service and actively assisted in organizing the **Orientation Programme 2023** for over **1200** freshers

Extra-Curricular Activities

- Secured the **Design and Animation trophy** at **Galaxy'22**, an inter-hall cultural competition featuring 14 halls with over 7000 students
- Member of the **champion** team in the **Institute Cricket League**, a prestigious campus-wide cricket tournament with teams from 14 halls