



# SHARVANI JADHAV

Senior Undergraduate  
Mathematics and Scientific Computing  
Indian Institute of Technology Kanpur

the-7g-girl  
Sharvani Jadhav  
+91-9552365775  
sharvaniuj21@iitk.ac.in

Year	Degree/Certificate	Institute	CPI/%
2021 - Present	Graduation	Indian Institute of Technology Kanpur	7.3/10
2021	Class XII (HSC)	Abhinav College, Pune	90.3%
2019	Class X (ICSE)	St. Helena's School, Pune	95.6%

## SCHOLASTIC ACHIEVEMENTS

- Qualified for **Indian National Maths Olympiad (INMO)** 3 times, ranking among **top 20** in Maharashtra & **top 900** students in India
- All India Rank 2488**, JEE Advanced 2021 (top 1% of 2.5L+ pupils)
- All India Rank 3945**, JEE Mains 2021 (top 0.4% of 1M+ aspirants)

## INTERNATIONAL RESEARCH EXPERIENCE

**Bayesian Modelling of Road Traffic Collisions** Jun'24-Present  
Mentor: Prof. Lee Fawcett, Newcastle University, England

Received **Letter of Recommendation** for exceptional problem-solving skills

- Developed **Accident Predictive Model** using **Bayesian statistics** to find best government strategies for reducing road accidents
- Applied **AIC-based model selection** to determine **7** parameters for **negative binomial regression** on data from 67 traffic sites
- Implemented the **Metropolis-Hastings MCMC algorithm** for **10,000 iterations** to precisely fine-tune model hyperparameters
- Evaluated priors such as **Weibull**, **Lognormal**, etc with different parameters using **DIC** to identify the best fit for causality data
- Analyzed data from **56 sites**, **identifying 11 high-risk locations** for targeted speed camera placement reducing casualties by **40%**

## WORK EXPERIENCE

**Generative AI Intern | Quantstac** Mar'24-Jun'24

- Developed an **AI-based video advertisement generator** to incorporate branded items into existing movie scenes using **VAEs**
- Tuned a **stable video diffusion** model on **10+ hyper-parameters** sampler, scheduler, seed, cfg-min for text-to-video generation
- Upscaled** low-resolution images to high resolution using models like **SUPIR**, **LDSR** etc in ComfyUI achieving **4.5x improvement**

**Machine Learning Intern | Nitrosk** Jan'24-Mar'24

- Developed a **deep learning-based model** to estimate body measurements from video input for an easy contactless solution
- Implemented **face** and **body detection** using **OpenCV** with **background removal** from videos containing up to **20+ people**
- Incorporated **gyroscopic angles** to adjust the model for tilt and modeled body in 3D space from measurements using **GANs**

**Software Development Intern | Mobitara** Sep'22-Jan'23

- Led a team of **5** students to develop a **responsive dashboard** using **Node.js** and **React.js** to facilitate real-time fleet tracking
- Applied optimization techniques like **code splitting** and **lazy loading** to **minimize latency** and **increase responsiveness**
- Leveraged **Postman** for **API testing** and optimization, ensuring reliable **data retrieval** & seamless **backend-frontend integration**

## POSITIONS OF RESPONSIBILITY

**President | Hall of Residence VI, IIT Kanpur** Mar'23-May'24

- Elected by **1000+ residents** to preside over the Hall Executive Committee of **7 members**, supervising **110+ contract workers**
- Led** Shauryas to secure the **highest-rank in history** in Galaxy, an inter-hall competition with highest total score among **5** pools
- Installed **12** washing machines worth **Rs. 4L** for improved living
- Spearheaded Hall Day with **Rs.5 lakh** attracting **2,000+ attendees**

**Leader | Bicycling Society, IIT Kanpur** May'22-May'23

- Led a team of **20 secretaries** in organizing regular cycling rides resulting in **3x growth** of cycling community in IITK post-covid
- Initiated and executed a **first-of-its-kind Duathlon** in campus attracting **100+** participants, garnering **20k+ Instagram views**
- Achieved a **5x increase** in online reach through social media

**Batch Senator | Students' Senate, IIT Kanpur** Feb'22-Feb'23

- Elected by a batch of **1200+ Y21 students** and became student body representative to address their problems in students' senate

## TECHNICAL PROJECTS

**Nightlight Analysis of Factories** Jun'23-Present

Mentor: Prof. Srinivasan Rangan, Finance & Accounting, IIM Bangalore

- Analyzed **NASA's VIIRS Nightlight** dataset at **500m<sup>2</sup>** resolution and a **24-hour frequency**, extracted using **Google Earth Engine**
- Leveraged the **EPA dataset** to identify **over 8,000 factories across the USA**, and analyze the total waste disposed by them annually
- Integrated the two results via **time series analysis** and correlation techniques like **Pearson correlation** and **Chatterjee correlation**

**Introduction to Machine Learning** Aug'23-Nov'23

CS771 Course Project under Prof. Piyush Rai

- Implemented **kernelized ridge regression**, achieving accuracy of **96.7%** with an **RBF kernel** & optimally located landmarks
- Applied **PCA** and **t-SNE** to project **784-D MNIST** digit data to 2-D, visualizing and comparing the two clustering methodologies
- Improved classification **accuracy from 46.9% to 73.3%**, by using a hyper-parameterized multi-output linear regression model

**Investment Banking Analyst** Nov'23-Dec'23

Finlatics, FincruX Technologies LLP

- Set up a simulated **private equity fund** & assessed investment proposals to **identify startups** with significant growth potential
- Explored various investment strategies, including **deal sourcing**, valuation, **negotiation**, and **exit strategy** to maximize returns
- Implemented **discounted-cash-flow model** to exactly determine **valuation of 7** companies & conducted in-depth case studies

**Image Processing** Aug'23-Nov'23

EE604 Course Project under Prof. Tushar Sandhan

- Developed a **cross bilateral filter** algorithm using **NumPy** & **OpenCV** to balance brightness & saturation in day & night images
- Developed a **de-skewing algorithm** using **Sobel filter** & contours to align skewed Sanskrit sentences, improving **OCR accuracy**
- Built an **audio classification system** to distinguish between metal & cardboard sounds using **windowed Fourier transforms**

**Business Analytics using Python** May'22-Aug'22

Finance and Analytics Club, IIT Kanpur

- Preprocessed **Mergers & Acquisitions** data to generate **bar**, **line** & **scatter plots** for data visualization using **Matplotlib** & **Seaborn**
- Applied **multilinear regression**, **decision trees** and **CNNs** to perform **financial modeling** and **forecast stock market trends**
- Developed a model for accurately predicting **house prices** in California using **SVM**, **Random Forest Regressor** & **XGBoost**

**Game Theory and Auctions** Jun'22-Dec'22

Stamatics Society, IIT Kanpur

- Utilized **Nash Equilibrium** & Multi-Strategy Nash Equilibrium to develop optimized solutions that **maximize payoffs** in games
- Investigated strategic decision-making in game theory models, like the **Prisoner's Dilemma**, **Stag Hunt**, and **Battle of the Sexes**
- Applied First-price and Second-price **auctions theory** along with **Revenue Equivalence Theorem** to solve the preset assignments

## TECHNICAL SKILLS

- Programming Languages:** C++, C, Python, SQL, R
- Utilities:** MATLAB, R studio, Tableau, Excel,  $\LaTeX$
- Libraries:** Numpy, Pandas, Matplotlib, Scikit-Learn, Seaborn
- Web:** HTML, CSS, JavaScript, ReactJs, Figma

## RELEVANT COURSES

- ML:** Advanced topics in ML, Intro to ML, Image Processing
- Probability:** Probability and Statistics, Bayesian Statistics
- CS:** Data Structures & Algorithms, Fundamentals of Computing
- Maths:** Linear Algebra, Numerical Analysis & Computing