Shrutikirti Singh

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Academic Qualifications

Year	Degree	Institute	CPI/%
2020 - Present	BT-MT	Indian Institute of Technology, Kanpur	7.6/10.0
2019	Class XII (CBSE)	Jawahar Navodaya Vidyalaya, Rajgir	91.6%
2017	Class X (CBSE)	Jawahar Navodaya Vidyalaya, Basti	10.0/10.0

Work Experience/Research Work

VAWT with variable amplitude pitching 🗘 | Mentor: Dr. Abhishek 希 | Department of AE, IITK | UG Project 🛮 🛗 Aug'23 - Nov'23

Ohioativa	• To optimize Vertical Axis Wind Turbines (VAWT) efficiency, develop an innovative solution by the integration
Objective	of a custom screw gauge mechanism, achieving variable amplitude pitching and enhancing overall performance.
	• Derived mathematical relationship between pitch amplitude and length through trigonometry and geometry
	• Conducted comprehensive simulations to elucidate the relationship between pitch amplitude and the length of the L2
Approach	bar linkage in a crank and rocker-based mechanism, providing insights into the dynamic behavior of the pitch control
11	• Engineered a precise screw gage mechanism for effective control and manipulation of length of the four-bar linkage
Outcome	• Successfully designed a precise mechanism, optimizing VAWT efficiency towards renewable energy advancements

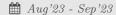
Key Projects

DeCAPTCHA O | Machine Learning | Dr. Purushottam Das



- Developed a character recognition model by using logistic regression and image preprocessing techniques with OpenCV
- Achieved accuracy by removing obfuscating lines and segmenting characters, ensuring robust captcha code image identification
- Attained 99.8% accuracy with rapid 1.431 ms training times, demonstrating exceptional precision in captcha recognition on images

Bayesian Machine Learning | Machine Learning | Dr. Purushottam Das



- Created a Bayesian Linear Regression model using PyMC3(MCMC model) ML package to predict the final grade of students
- Developed Bayesian Neural network using Pyro and Pytorch to predict the final grades using identical dataset employed for BLR
 Both Pyro and PyTorch approaches surpassed traditional methods such as Linear Regression, SVM, and Random Forest in performance
- Rebalancing Portfolio Strategy Model O | Self Project

H Jun'22

- Developed the calendar portfolio rebalancing based trading strategy to identify the top 5 stocks with the highest return precisely
- Implemented functions to accurately calculate Cumulative Annual Growth Rate, Annualized Volatility, and Sharpe Ratio
- Used inbuilt python libraries numpy, pandas, yfinance & matplotlib for fetching and visualizing comprehensive data from fxcm

Helicopter Coupled Trim Analysis | Helicopter Theory | Dr. Abhishek



- Developed coupled trim analysis code for UH-60A Black Hawk & MATLAB simulations for blade aerodynamic performance
 Implemented numerical methods like six-point Gaussian Quadrature and Newmark's Algorithm, solving the blade flap equation
- Calculated blade hub shear forces and moments in rotating frame of reference with an azimuth angle of the rotating helicopter blades

Technical Skills

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	Programming Languages	Libraries	Frameworks	Utilities	
	C++, Python, C, HTML, SQL,	NumPy, Pandas, Matplotlib,	OpenCV, Keras	Git, I₄TEX, MS Word,	
	CSS, MATLAB	Scikit-Learn		MS Excel, Illustrator	

Relevant Courses

Machine Learning Probability and Statistics Measurements & Data Analysis Linear Algebra & ODEs Fundamentals of Programming Introduction to Electronics Real Analysis & Multivariable Calculus Introduction to Robotics

Positions of Responsibility

Organizer, Design Events and Competitions | Techkriti'23 | IIT Kanpur

⊞ Dec'22 - Apr'23

	• Effectively led a 3-tier team of 20+ students, ensuring coordination and management under guidance		
Leadership	• Formulated competition rules and problem statements for Challenges providing clear guidance		
Initiative	• Initiated targeted outreach , boosting participation to 500+ students from civil, and architecture branches		
	• Proactively contacted colleges, optimizing participation of women students through emails & networks		
Management	• Efficiently oversaw logistics planning, registration, & testing setup for the Bridge Design Challenge		
	• Managed the organization of the 3 design competitions, including booking, crowd management and planning		

Student Guide | Counselling Service | IIT Kanpur

■ Nov'21 - Nov'22

Mentorship	• Guided and mentored 6 freshmen students, facilitating their transition to the online institute environment
Teamwork	• Facilitated academic support through collaborative mentor meetings, cultivating enduring student rapport
	• Collaborated with the Counselling Service team for the organization of Orientation Programme'21

Extracurricular Activities

- Represented IIT Kanpur at the Inter IIT Sports Meet 2022 & 2023 as a team member of the Women's Basketball Team'IITK
- Received the prestigious Governor Award from Bharat Scouts and Guides in recognition of efforts in promoting young individuals
- Recipient of the prestigious DRDO scholarship awarded by the R & D Board, Ministry of Defence, Government of India
- Attained an impressive top 30 ranking in the Zuno Fellowship Aptitude Test 2023, demonstrating aptitude reasoning skills
- Volunteered in Prayas to provide Mathematics education to economically disadvantaged students residing on the outskirts of IITK
- Initiated transliteration project of poem "Still, I Rise" by Maya Angelou and served as Secretary of Hindi Sahitya Sabha, IITK