

MUKESH DEWANGAN

Machine Learning • Deep Learning • Data Science

Junior Undergraduate at IITGN | Nationality: Indian Citizen

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EDUCATION

Indian Institute of Technology Gandhinagar (IITGN)			Gandhinagar, Gujarat	
B.Tech in Mechanical Engineering with Minors in Computer Science (8.42)			2023-2027	
Qualification	Specialization	Institute	Year	CPI/%
B.Tech	Mechanical Engineering	IIT Gandhinagar	Present	8.42
Class XII	Physics, Chemistry, Maths	Sri Sankara Vidyalyaya	2023	90.8
Class X		Aditya Birla Public School	2021	97.6

EXPERIENCES

Fox-Trading		Bangalore, India
Machine Learning Intern		May '24 - June '24
<ul style="list-style-type: none">Diabetes Prediction and Data Analysis - Developed a diabetes prediction model using machine learning algorithms (Logistic Regression, Decision Trees, and Random Forests) with a strong focus on the mathematical foundations of these models. Leveraged techniques like gradient descent, entropy-based splitting, and probability thresholds for model building and optimization. Evaluated model accuracy using precision, recall, F1-score, and cross-validation to ensure reliability and robustnessData Visualization and Order Predictions - Analyzed bike-sharing data to uncover actionable trends, utilizing custom visualizations crafted with Matplotlib and Seaborn for enhanced clarity. Designed predictive models for order demand forecasting in retail settings, achieving improved accuracy by fine-tuning hyperparameters through grid search and applying domain-specific constraints. Extracted insights on seasonal variations and demand cycles by employing advanced techniques such as Fourier transforms and statistical correlation analysis, ensuring data-driven strategies.Key Highlights:<ul style="list-style-type: none">Gained a deeper understanding of the mathematical foundations of machine learning, including concepts such as probability, optimization, and model evaluation metrics.Strengthened abilities in data-driven decision-making and developing predictive models tailored to solve real-world challenges effectively.		

SELECTED PROJECTS

Next Character/Token Predictor - Streamlit Application		Prof. Nipun Batra
Python • PyTorch • Streamlit App • Github Repo		Nov'24-Dec'24
<ul style="list-style-type: none">Developed a pipeline model for next-character prediction based on preceding k characters.Fine-tuned models on diverse datasets with varying embedding dimensions and configurations, optimizing for different text corpora (Malgudi Days, A Suitable Boy, Three Men In A Boat, Lord of the Flies).Deployed an interactive Streamlit application allowing users to adjust hyperparameters, including token embedding dimensions (e.g., 20, 40, 80), for enhanced experimentation and analysis.		
Image and Audio Reconstruction and Image compression		Prof. Nipun Batra
Python • PyTorch • Scikit-Learn • Github Repo		Sept'24-Oct'24
<ul style="list-style-type: none">As a group assignment in Machine Learning, developed algorithms for image and audio reconstruction using Random Fourier Features (RFF) and linear regression to map spatial/image coordinates (X, Y) to pixel color values (R, G, B), and time (t) to amplitude (A) for audio signals.Implemented reconstruction pipelines for custom datasets, calculating metrics such as Root Mean Squared Error (RMSE), Peak Signal-to-Noise Ratio (PSNR) for images, and Signal-to-Noise Ratio (SNR) for audio to evaluate model performance.Applied super-resolution techniques to upscale images by a factor of 2, leveraging RFF to predict high-resolution pixel values from low-resolution inputs.Reconstructed mixed pixels in images using data analytics, pattern recognition, and image processing techniques.Applied mathematical methods like matrix factorization to reduce dimensionality, enhance image quality, and repair damaged pixels efficiently.		

SKILLS

Languages and Libraries:	Python	SQL	HTML	Tensorflow	PyTorch	Scikit-Learn	OpenCV	NumPy
	Pandas	SciPy	Matplotlib					

RELEVANT COURSES & CERTIFICATIONS

Completed Institute Courses: Machine learning, Probability, Statistics, and Data Visualization, Calculus of Single Variable and Linear Algebra, Calculus of Several Variables, Numerical Analysis

POSITIONS OF RESPONSIBILITY & EXTRA CURRICULAR

- Senior Tech-Expo Executive, Amalthea, Annual Technical Summit**

Organized corporate outreach for IITGN's Annual Technical Expo, Amalthea, by inviting companies to showcase technologies and connecting them with professors, industrialists, and professionals to foster collaboration and contributions.

IIT Gandhinagar

Apr'24 - Apr'25
- Junior Design Executive, Amalthea, Annual Technical Summit**

Designed posters, standees, and other visual materials for IITGN's Annual Tech Expo, Amalthea, using Adobe Illustrator, ensuring professional event branding and effective promotion.

IIT Gandhinagar

Sept'23 - Apr'24