# Shardul Junagade

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## EDUCATION

**Indian Institute of Technology, Gandhinagar**                Gandhinagar, India
*Bachelor of Technology in Computer Science and Engineering, Minor in Mathematics*        *2023 – 2027*
CPI: **9.22**/10 | Transcript

**Amber International School**                                              Thane, India
*Class XII - Central Board for Secondary Education*        *2021 – 2023*
Percentage: **95.8%** | Ranked **1st** in the school

**Lok Puram Public School**                                              Thane, India
*Class X - Central Board for Secondary Education*        *2016 – 2021*
Percentage: **98%** | Ranked **1st** in the school

## PROJECTS

**Next-Word Prediction App**                                        Sep '24 – Oct '24
*(Prof. Nipun Batra, IIT Gandhinagar)* | Link | *WebApp*
- Built an **MLP-based next-word prediction model** trained on the Indian Food Recipes dataset, generating meaningful recipe-based text sequences based on previous k words.
- Developed an interactive **Streamlit web app** with configurable hyperparameters including context size, embedding dimension, activation function, random seed, and temperature for customizable text generation.

**Matrix Factorization-Based Image Reconstruction & Compression**        Sep '24 – Oct '24
*(Prof. Nipun Batra, IIT Gandhinagar)* | Link
- Implemented **matrix factorization** for **image reconstruction**, recovering missing pixels by experimenting with different ranks and mask proportions; evaluated performance using **RMSE** and **PSNR**.
- Designed an **image compression pipeline** using low-rank matrix factorization and gradient descent, and analyzed trade-offs between compression efficiency and reconstruction quality.
- Benchmarked matrix factorization against **Random Fourier Features (RFF) + Regression** for missing pixel recovery, achieving superior RMSE and PSNR scores.

**Human Activity Recognition (HAR)**                                Aug '24 – Sep '24
*(Prof. Nipun Batra, IIT Gandhinagar)* | Link
- Performed EDA on the **UCI-HAR dataset**, featuring **time-series data** of 30 subjects performing six activities.
- Harnessed the **TSFEL library** for feature extraction and **PCA** for dimensionality reduction.
- Trained a **Decision Tree model** on the featurized data and tested it using the activity data collected with the **Physics Toolbox Suite** app to achieve **66% accuracy** and **67% precision**.
- Built a custom **Decision Tree implementation** from scratch, achieving results comparable to Scikit-learn, with tree visualization via **Graphviz**.

**EdgeNet - Image Filters with CNNs**                                Sep '24
*(WhatTheHack Hackathon, IIT Gandhinagar)* | Link
- Designed and trained a **U-Net-based CNN** to approximate classical edge-detection techniques like **Sobel, Laplacian, and Prewitt** without explicit filter kernels, achieving **93.47% accuracy** and **SSIM of 0.92**.
- Optimized training with a **learning rate scheduler** to improve model convergence and performance.

**DragNotes - A React-Based Note-Taking App**                        July '24
*(Self-Initiated)* | Link
- Built an interactive **React** note-taking application with **drag-and-drop** functionality for seamless organization.
- Integrated **Appwrite** for backend services, enabling secure data storage, authentication, and real-time syncing.
- Implemented **auto-save** and **customizable note colors** for personalized user experience.

## TECHNICAL SKILLS

**Programming Languages:** Python, C/C++, JavaScript, HTML/CSS, SQL, MATLAB, Verilog.
**Libraries:** PyTorch, TensorFlow, Scikit-Learn, OpenCV, Streamlit, BeautifulSoup, Selenium, NumPy, Pandas, Matplotlib, Seaborn, TSFEL.
**Frameworks:** React.js, Next.js, Astro, Node.js, Express.js, Flask, jQuery, PostgreSQL.
**Competitive Programming:** Codeforces, GeeksforGeeks.
**Developer Tools:** Git, GitHub, VS Code, Jupyter Notebook, GitKraken, Postman, Xilinx Vivado, Autodesk Inventor.

## Achievements

- Secured branch change to **Computer Science & Engineering** based on academic performance at IIT Gandhinagar.
- Recipient of the **Dean's List Award for Academic Excellence** with a SPI of **9.81** in Semester I at IIT Gandhinagar.
- **JEE Advanced:** Achieved an **All India Rank (AIR) of 5417** among over 190,000 qualifying candidates.
- **JEE Mains:** Scored in the **99.51 percentile**, ranking 5826 among over 1.1 million candidates.
- **Maharashtra Scholarship Exam:** Achieved **State Rank 10** among thousands of students.

## Relevant Coursework

### Computer Science:

Introduction to Data Science, Machine Learning [**A**], Data Structures and Algorithms I [**A**], Theory of Computing, Discrete Mathematics [**A-**], Data-Centric Computing [**A-**], Computing [**A**]

### Mathematics:

Linear Algebra and Single Variable Calculus [**A**], Calculus of Several Variables [**A-**], Probability, Statistics, and Data Visualization, Ordinary Differential Equations [**A**], Partial Differential Equations [**A-**]

## Certifications

- Machine Learning Specialization – Stanford Online
- Unsupervised Learning, Recommenders, Reinforcement Learning – Stanford Online
- Advanced Learning Algorithms – Stanford Online
- Supervised Machine Learning: Regression and Classification – Stanford Online
- The Complete 2024 Web Development Bootcamp – Udemy
- GitHub Actions Certification – GitHub
- GitHub Foundations Certification – GitHub
- MATLAB Onramp Certification – MATLAB

## Positions of Responsibility

**Core Member, ML Club**                                                          Oct '24 – Present
- Contributing to the ML Club's initiatives by collaborating with members to organize workshops, events, and projects focused on deep learning and machine learning, fostering a strong learning community.
- Conducting regular discussion training sessions on advanced machine learning techniques, helping students to deepen their understanding and expertise in state-of-the-art ML technologies.

**Student Representative, Career Development Services**                            Feb '24 – Present
- Contributed to the development of a comprehensive database to streamline internship and placement opportunities for IIT Gandhinagar students, collaborating with the Institute Placement Cell.
- Coordinated with HR professionals from various companies to optimize recruitment procedures and facilitated effective communication between the placement cell and company representatives.

**Tech Executive, Blithchron '25**                                                April '24 – Present
- Contributed to the development of the official Blithchron '25 website using Astro and React.js, ensuring a seamless user experience and up-to-date content to enhance the digital presence of IIT Gandhinagar's cultural festival.

**ADH Mentor, MA 103: Linear Algebra and Calculus**                               Sep '24 – Nov '24
- Mentored over 300 students in the MA 103 course, addressing doubts, explaining key concepts, and promoting active engagement to foster deeper understanding of Linear Algebra and Calculus.