Mayank Yadav

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Education

Delhi Technological University May 2027
B. Tech. Computer Science and Engineering *CGPA: 8.88*

Central Board of Secondary Education (Class 12th) May 2023
Computer Science, Mathematics, Physics, Chemistry, English, Physical Education *Grade: 97.4 %*

Central Board of Secondary Education (Class 10th) August 2021
English, Hindi, Mathematics, Science, Social Science, Sanskrit *Grade: 97.8 %*

Technical Skills

Languages: C/C++, Python, Java, HTML, Tailwind-CSS, JavaScript, SQL, LaTeX
Tools: Git/GitHub, VS Code, Google Cloud Platform, AutoCAD
Frameworks: React, Node.js, Flask
Libraries: PyTorch, Detectron2, Tensorflow, Keras, pandas, NumPy, Matplotlib, nltk, Scikit-Learn, OpenCV, LangChain

Experience

Web Developer Intern, DTU, Delhi *October 2025 – December 2025*

- Co-Developed a centralized IQAC data management suite using the MERN stack, deployed across 15+ departments and used by 500+ faculty members for structured academic and administrative data collection with aggregated dashboards.
- Engineered a 3-tier APAR workflow system (Faculty → Reporting Officer → Reviewing Officer) with automated data pre-filling from the IQAC DB, ensuring data consistency and reducing manual redundancy.
- Implemented JWT-based authentication, role-based access control (RBAC), and WebSockets (Socket.io) to enable secure access control and real-time update propagation across hierarchical user roles.

Research Intern, DTU-ISRO, Delhi *June 2025 – Present*

- Developed 5+ deep learning models for vision-based pose estimation of non-cooperative satellites using PyTorch framework.
- Implemented and optimised multiple SOTA deep learning architectures including SPN, PVNet, ViT Pose, and SWIN Transformer for robust 6-DoF satellite pose estimation; applied RANSAC and Perspective-n-Point solver.
- Designed a novel SWIN-based pixel-voting mechanism that integrates transformer attention with 4-layer decoder for PVNet's voting strategy.
- Conducted experiments on SPEED dataset containing synthetic spacecraft images and SPEED+ dataset with hardware-in-the-loop test images.

Projects

Open Source Contribution | GitHub PR Link | Deployed Link | *JavaScript, Three.js* July 2025

- Delivered a key feature to the popular NN-SVG (5.6k+ GitHub stars), a tool widely used by ML researchers to parametrically generate publication-ready neural network architecture diagrams, enabling users to upload and render their own images as the input layer texture.

Vulcan-16 | GitHub Link | Deployed Link | *HDL, Python, Assembly, Compiler Designing, Jack, Git, React, Flask* January 2025

- Architected a 16-bit Harvard-architecture CPU in HDL, including core logic, memory, and I/O interfaces.
- Created a 3-phase compilation pipeline and integrated web-based development environment.
- Designed an OS with 8 modular services for memory management, graphics, I/O, and utilities.

Mentoring Portal | GitHub Link | Deployed Link | *React, Tailwind, Node.js, Redux Toolkit, Express, MongoDB* December 2024

- Developed a full-stack mentorship portal enabling secure mentor-student engagement with Q&A forums and resource library for 5 competitive exams.
- Implemented end-to-end features using React, Redux Toolkit, Express, and MongoDB, delivering 4+ core modules.
- Deployed and maintained a scalable platform serving 50+ underprivileged students for career guidance.

Int-O-View | GitHub Link | Deployed Link | *Python, TypeScript, React, Express, Flask, MongoDB, LangChain* August 2024

- Engineered an AI-Agent based interviewer app using Gemma 2, Qwen QwQ, and ElevenLabs for realistic voice synthesis.
- Integrated Supabase embeddings and LangGraph StateGraph for context retrieval powering 100 real-time interview simulations and LLM-driven question generation.
- Collaborated in a 5-member team to secure 1st place in the SIH internal round, surpassing 200+ competing teams.

Lung Cancer Detection | GitHub Link | *Python, PyTorch, Detectron2, Pydicom* March 2025

- Transformed the LIDC-IDRI dataset by converting 3D DICOM images into 2D JPEG format using advanced windowing techniques, and reformatted XML annotations into the COCO JSON standard.
- Developed a two-stage lung nodule detection pipeline having a Cascaded Mask R-CNN (trained on VESSEL12 dataset) for lung segmentation, and a Faster R-CNN for nodules localisation and prediction of 5 key radiological features—malignancy, margin, sphericity, texture, and spiculation—to aid in diagnostic decision-making.
- Achieved segmentation accuracy of 81.98% and bounding box accuracy of 93.62% on the test set in the segmentation model, and Validation set bounding box AP50 scores of 24.97 (malignancy), 24.34 (sphericity), 23.16 (margin), 23.26 (spiculation), and 16.76 (texture).

Summer ML Projects | Github Link | *Python, PyTorch, Transformers* June 2024

- Developed a collection of 7 machine learning projects during the Summer School on AI by MLR, DTU, demonstrating core concepts in ML and deep learning.
- Implemented a Generative Pre-trained Transformer 2 (GPT-2) from scratch for text generation and a Vision Transformer (ViT) for image classification.
- Built 3 different image captioning models implementing ”Where to put the Image in an Image Caption Generator” paper using a combination of CNN and RNN/LSTM architectures and trained on Flickr 8k images.

Achievements

NTSE Scholar: Recognized for outstanding performance in the NCERT’s national-level scholarship examination, placing among the top 1000 scholars.

Reliance Foundation Undergraduate Scholarship: Selected as one of 5,000 nationwide for academic support and leadership development.

CBSE Certificate of Merit in Mathematics: Achieved 100 in Mathematics, ranking in the top 0.1 % in the 2023 All India Secondary School Examination.

Position of Responsibility

AlgoRave | *Co-Head* September 2023 - Present

- Authored and validated problems for 3+ contests on CodeForces, utilizing Polygon platform for problem development and testing.
- Drafted 2+ detailed editorials for the contest problems, including solution approaches, algorithms, and code implementations.
- Organised contests that attracted 100+ participants, enhancing engagement and competitive programming culture within the university