

# Deep H. Das

B.Tech - Artificial Intelligence

Sardar Vallabhbhai National Institute of Technology, Surat

## EDUCATION

Degree/Certificate	Institute/Board	CGPA/Percentile	Year
B.Tech in AI	NIT Surat	9.54	2023–Present
Higher Secondary	GSHSEB	99.70	2022–2023
Secondary	GSHSEB	98.90	2020–2021

## EXPERIENCE

### L&T Technology Services

*AI Intern — Plant Engineering Business Unit*

*Jul 2025 - Oct 2025*

Vadodara, Gujarat

- Working on **automating the interpretation of P&ID (Piping and Instrumentation Diagrams)** using AI and computer vision techniques.
- Developing algorithms for **relation extraction between instrumentation components**, enabling structured representation from unstructured diagrams.
- Contributing to the creation of a scalable AI pipeline to digitize and understand engineering schematics in industrial contexts.

### SVNIT Surat

*Research Intern*

*May 2025 - Jul 2025*

Surat, India

- Conducting applied research in AI under the guidance of **Dr. Rahul Dixit**, focusing on multi-modal, audio, and explainable AI.
- Contributed to **five research papers** (under review) across domains such as explainable AI, face forgery detection, audio codec classification, and cross-modal misinformation detection.
- Worked on designing **large-scale datasets, novel AI pipelines, and model evaluation setups**.

### Great Notes

*Full Stack Developer*

*Oct 2024 - Jan 2025*

Remote

- Designed, developed, and deployed a dynamic website from the ground up, ensuring robust functionality and scalability.
- Collaborated cross-functionally with designers and developers, streamlining the development lifecycle for optimal efficiency.
- Successfully launched a fully operational, commercially viable platform, demonstrating strong full-stack expertise.

### PhysicsWallah

*Subject Matter Expert (Physics)*

*Apr 2024 - Jun 2024*

Remote

- Provided in-depth subject matter expertise, curating high-quality physics content for enhanced student learning.
- Developed comprehensive solutions and academic resources, ensuring accuracy and conceptual clarity.

## PROJECTS

### Virtual Salesman Extension - Smart E-Commerce Recommendations

*AI-Powered Personal Shopping Assistant via Browser Extension*

*Jul 2025 – Jul 2025*

[Extension](#) | [GitHub](#)

- Built a **Chrome extension** that generates **personalized shopping recommendations** using AI based on user queries like budget and product specs.
- Integrated real-time **web scraping** to extract specifications and pricing from e-commerce pages dynamically.
- Used **ChatGPT-based logic** to interpret user intent and return contextual product suggestions directly in the browser.

### Anveshak - Personalized Cold Email Generation System

*AI-Powered Cold Mailer for Job & Academic Outreach*

*May 2025 – Jul 2025*

[Website](#) | [GitHub](#)

- Developed a comprehensive **AI-driven platform** for generating personalized cold emails targeting employers and academic faculty based on **resume analysis and company/faculty matching**.

- Integrated advanced **Resume Parsing** and **LLM response parsing** algorithms, utilizing Google Gemini for **resume parsing, company research, and email content generation**.
- Built a **microservice architecture** using the MERN stack (MongoDB, Express, React, Node.js) for seamless data processing and communication between system components.
- Enabled email generation for both job applications and academic collaborations, providing features like **company research, faculty matching, and customizable email templates**.
- The project attracted **1820** users in the first month of its deployment.

- **CarbonTrack - Carbon Footprint Tracker & Environmental Impact Monitor** *May 2025 – Jun 2025*  
[Website](#) | [GitHub](#)  
*AI-Powered Carbon Footprint Tracker for Users & Organizations*
  - Developed an **AI-driven web platform** for tracking and reducing carbon footprints for individual users, organizations, and departments.
  - Implemented **real-time monitoring** for environmental metrics, including temperature, energy usage, water consumption, and CO<sub>2</sub> levels, using **WebSockets** for instant updates.
  - Designed and integrated **AI-based recommendations and insights** to help users and organizations reduce their carbon footprints based on monitored data.
  - Created a **product impact analysis** feature, providing users with carbon footprint breakdowns for products based on material and frequency of use, with AI-driven eco-friendly alternatives.
  - Built **voucher-based reward systems** for users and organizations to incentivize carbon reduction efforts and provide **government incentives** for carbon emissions reductions.
  - Enabled **departmental carbon footprint tracking** and reporting for organizations, allowing in-depth analysis and eco-friendly solution suggestions for each department.
- **WanderBot** *Feb 2025 - Mar 2025*  
[Website](#) | [GitHub](#)  
*GenAI-Powered Travel Assistant*
  - Built an **AI-powered travel assistant** using **Gemini Pro** to generate **personalized travel itineraries**.
  - Integrated **Eventbrite API** to fetch suggested travel destinations based on user preferences.
  - Used **AviationStack API** to provide real-time **flight options** from the user's origin to their destination.
  - Implemented a **train journey search** feature, particularly useful for travel within India.
  - Developed a **hotel recommendation system**, suggesting accommodations near the user's destination.
  - Added a **fun travel facts generator** to enhance user engagement and keep the wanderlust alive.
  - Designed a **beautiful and intuitive UI** for seamless user experience.
- **MagicBot - Voice LLM** *Mar 2025 - Mar 2025*  
[GitHub](#)  
*Real Time Voice Assistant*
  - Built a **real-time voice assistant** leveraging **Groq's LLM** for intelligent conversation handling.
  - Utilized Python's BytesIO and gTTS libraries for seamless **text-to-speech** conversion and **audio streaming**.
  - Enabled smooth **interactive dialogues** with low-latency voice responses for a natural user experience.
- **Gesture Controlled Suite** *Mar 2024 - Jun 2024*  
[GitHub](#)  
*Computer Vision-Based Application*
  - Developed an **AI-powered gesture recognition system** enabling intuitive control over digital interfaces.
  - Enhanced user experience by providing a **hands-free, gesture-driven interface** for various applications.
  - Implemented **gesture-based functionalities**, including **mouse and keyboard control, PPT navigation, air draw, 3D object manipulation, Pomodoro timer, screenshots, and screen zoom**.
  - Utilized **OpenCV & MediaPipe** for efficient real-time hand tracking and gesture classification.
- **ShieldGuard - Secure AI Platform for Veterans & Military Agencies** *May 2025 – Jun 2025*  
[Website](#) | [GitHub](#)  
*Military-Grade AI Platform for Mental Health, Communication & Intelligence*
  - Built a **multi-feature AI-powered platform** tailored for veterans, active-duty soldiers, and military agencies, addressing mental health, communication, and real-time intelligence needs.
  - Developed an **AI-driven PTSD Companion chatbot** for trauma care, offering 24/7 emotional support, guided therapy, and crisis intervention in a discreet, accessible manner.

- Engineered **blockchain-secured communication** channels enabling encrypted, interception-proof real-time intel sharing for tactical operations.
- Created a **Veteran Skill-Sharing Hub**, facilitating mentorship, gig-based employment, and expertise monetization to support post-service transitions.
- Aggregated battlefield updates, cyber-threat alerts, and verified military news through a **centralized AI-powered intelligence center**, reducing misinformation and aiding rapid decision-making.
- Designed platform with a **modular and scalable architecture** to support cross-agency collaboration, secure role-based access, and seamless deployment.

- **EcoBrew - AI-Driven Sustainability Platform**

*MERN Stack + AI for Environmental Impact*

*Aug 2024 - Nov 2025*

[Website](#) | [GitHub](#)

- Developed an **AI-powered platform** to **reduce paper cup waste** and promote sustainability.
- Created a **personalized tracking system** to monitor **waste reduction & chemical exposure savings**.
- Designed a **dynamic impact dashboard** with **real-time analytics** and leaderboards.
- Integrated **GPT-2 & NLP** for **AI-powered eco recommendations** to guide users toward sustainable choices.
- Built an **interactive insights hub** to provide users with the latest sustainability blogs, news, and eco-friendly practices.

- **Smart Healthcare Platform**

*AI-Powered Health Monitoring & Doctor Booking*

*Sep 2024 - Sep 2025*

[Website](#) | [GitHub](#)

- Created a **real-time health recommendation dashboard**, updating **every 5 minutes** based on **Fitbit/smartwatch data**.
- Developed a **healthcare platform** offering **doctor bookings, health analytics, and community support**.
- Implemented **location-based doctor booking** for home visits.
- Built **health metric calculators** for real-time health tracking.
- Designed an **awareness page** providing monthly insights into **diseases, symptoms, risks, prevention, and treatment**.
- Integrated a **Medicine Recommendation System** offering **drug alternatives and proper dosages**.
- Built a **Medicine Usage Helper**, providing **detailed descriptions of medicine usage, side effects, and interactions**.

- **Tarang - Drone Project**

*Autonomous Navigation & Precision Landing Drone System*

*Apr 2024 - Apr 2025*

[GitHub](#)

- Contributed as a core member of the **coding team** in an autonomous drone project focused on real-time mission execution and precision landing.
- Developed a custom **navigation algorithm** for autonomous travel to a specified GPS coordinate, followed by a **precision landing system** using ArUco markers and QR code detection.
- Integrated an automated **return-to-launch (RTL)** feature for safe retrieval after mission completion.
- Actively involved in the **physical assembly and piloting** of the drone, contributing to mechanical setup and flight testing.
- Assisted in **avionics selection and integration**, ensuring compatibility between flight controller, telemetry, and onboard sensors.
- Currently developing **terrain detection algorithms** to enhance autonomous obstacle avoidance and landing safety in dynamic environments.

- **Capify - Personal Finance Assistant**

*Web Application*

*Jul 2024 - Sep 2024*

[Website](#)

- Developed a comprehensive **finance management platform** with tools for **budget tracking, expense management, and financial insights**.
- Implemented **Split-Smart**, a feature simplifying **bill splitting** and tracking shared expenses seamlessly.
- Designed various **recommendation-based calculators** to assist users in financial planning.
- Integrated a **blogs & resources section**, providing users with expert financial guidance, including articles, podcasts, and talks from industry leaders.

- Built an **AI-driven stock market price prediction model** to help users make informed investment decisions.
- Developed a **personalized financial recommendation engine**, providing **five key suggestions** based on user data.
- Implemented an **invoice summarizer & data analyzer**, automatically extracting insights from uploaded invoices.

- **Agro We - Smart Agricultural Platform**

*Web-Based Decision Support System*

*May 2024 - Jul 2024*

[Website](#) | [GitHub](#)

- Designed a **web app for precision agriculture**, providing farmers with **real-time insights** for better decision-making.
- Developed a **user-friendly dashboard** with dynamic visualizations and a **weather forecasting system** for improved farm planning.
- Implemented a **recommendation engine** tailored to **soil type, crop selection, rainfall prediction, and farming season**.
- Empowered farmers by **simplifying complex agricultural data** into actionable insights to boost productivity and sustainability.

- **Task Manager Application**

*React Native-Based Task Management*

*Feb 2025 - Apr 2025*

[GitHub](#)

- Developed a **React Native task manager** enabling users to **create, update, delete, and organize tasks**.
- Implemented **task dependency management**, allowing users to set and visualize dependencies between tasks.
- Designed an **overdue task lookup system** to highlight and manage missed deadlines effectively.
- Integrated a **task scheduling feature** for users to plan and prioritize upcoming tasks efficiently.
- Built an **interactive task visualization** to provide a clear hierarchical view of task relationships.

## SKILLS

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- **Programming Languages:** Python, C++, C
- **Artificial Intelligence:** Machine Learning, Deep Learning, Generative AI, RAG LLM, AI, Computer Vision
- **Web Development:** React.js, Next.js, TypeScript, Javascript, Tailwind CSS, Bootstrap, Webflow, Wordpress
- **Databases & Tools:** MongoDB, SQL, Qdrant, GitHub, Web Hosting, Docker
- **Other Skills:** Competitive Programming, Data Structures and Algorithms, Prompt Engineering, Drone Making, Entrepreneurship

## RESEARCH WORK

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- Detecting audio forgery using deep learning techniques with attention mechanisms on ResNet++ [Paper](#)  
*Signal Imaging and Video Processing Journal*
  - Proposed a **deep-learning pipeline** for **detecting audio forgeries**, specifically **deepfake forgery**.
  - Integrated **Mel-spectrogram, multi-scale feature fusion, and transformer-based attention mechanisms** for enhanced detection accuracy.
  - Experimented on the **ASVspoof 2017 dataset**, achieving **state-of-the-art performance** under both clean and noisy conditions.
- Kantika — RAG Pipeline for Dermatology [Under Review](#)  
*Retrieval-Augmented Generation for Dermatological Question Answering*
  - Developed a clinically-aligned RAG pipeline combining **IR-CoT, RAPTOR, and CRAG** for dermatology-specific QA and reasoning.
  - Integrated vector stores and structured evaluation using **cosine similarity**, achieving high accuracy in long-form dermatological answers.
- Explainable AI — A Unique and Innovative Method [Under Review](#)  
*Interpretable Deep Learning for Trustworthy AI Systems*

- Proposed a novel framework to enhance **explainability** in black-box models.
  - Evaluation proved it to be better than **SHAP** and **LIME**.
- **UniFaceForge — Unified Face Forgery Detection System** *Under Review*  
*Comprehensive Dataset and Detection of All Major Face Forgeries*
- Created a large-scale benchmark dataset with **3 lakh fake** and **1 lakh real** face images covering all known forgery types.
  - Built a unified detection model, achieving state-of-the-art generalizability across forgery types.
- **C-Mind — Cross-modal Inference for Misinformation Detection** *Under Review*  
*Vision-Language Model for Social Media Fact-Checking*
- Developed a **contrastive multimodal framework** to detect misinformation from images and accompanying text.
  - Evaluated cross-modal alignment and truthfulness across real-world datasets from Twitter and news sources + MMFakeBench dataset.
- **Voice Encoding and Codec Detection** *Under Review*  
*Audio Forensics for Detecting Hidden Compression Artifacts*
- Proposed a supervised learning pipeline for detecting **encoding formats (WAV, MP3, AAC, Opus)** from audio files.
  - Introduced a **standardized preprocessing pipeline** and trained PANNS CNN on log-Mel spectrograms with ensemble learning for robust classification.

## ACHIEVEMENTS

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- National Level GeeksForGeeks Hackathon (Avishkaar Season 2) - Secured **3rd Runner-up** position.
- Statistella - IIT BHU National Level Data Analytics Competition - Secured **3rd Runner-up**.
- Autonomous Drone Development Challenge - ADDC 2025 - Secured **AIR 2** and **2nd Position in Safe Design Category**.
- 10x Finalist Positions: Avishkaar, Statistella, BITS GOA AI Hackathon, Convolve 3.0 (PAN IIT AI Hackathon), Gujarat Vidyapeeth x Odoo Hackathon, Hackcrux, SAE India Business Plan Competition, Quarkz Hackathon, Gandhian Ideathon Competition.
- Written **6 Research papers** and Published **1** in the domain of Artificial Intelligence.
- IICPC Merit Holder: Secured **1324** overall rank in the IICPC organised Codefest-2025.
- Codex (ACM\_CEG) - Achieved **4th place** in 1st edition.
- Web Wonders (NEXUS, NIT Surat) - **Runner-up** in the Website Design Competition.
- Competitive Programming: Achieved a peak rating of **1295 on Codeforces**, successfully solving **350+** problems on Codeforces and **475+ on LeetCode**.

## POSITIONS OF RESPONSIBILITY

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- **Junior Developer**, Google Developers Group on Campus *Jan 2025 – Present*
- **Co-Head**, Technical Committee, MindBend *Nov. 2024 – Present*
- **Senior Executive**, Research and Innovation Council *Jun 2024 – Present*
- **Senior Technical Member and Web Dev Head**, Phoenix Aero Drone Department *Mar 2024 – Present*
- **Member**, Nexus: Departmental Cell of CSE and AI *Sep 2023 – Present*